

MEDICAL PHYSICS WORLD

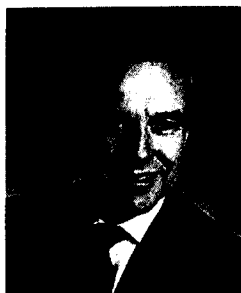
Bulletin of the International Organization for Medical Physics

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President's Message



Dear Fellow Member of IOMP,

Improved **COMMUNICATION** is vital if the IOMP is going to be able to achieve its goals and aspirations. Our Immediate Past President, Professor Boddy, was frequently frustrated by his inability to communicate adequately with members and member societies. On several occasions he wrote to the Presidents of our Adhering National Societies asking for their input on specific topics. Typical response rates were about one in ten. Part of the problem was that often he was writing to the wrong person, because the national society had

failed to inform the Secretary-General of a change in Officers i.e., Prof. Boddy's letter would go to a Past-President, who might fail to pass the message on to the current President. Again, failure to communicate. Another problem is that the President of a society is not necessarily the best person to contact. Presidents are usually extremely busy people with multiple commitments and too little time to spare. However, to find out who in a society is most likely to respond is a daunting task—half the time the IOMP Secretary-General cannot even find out who the current President is. I plan to make such communications a major priority during my term of office as IOMP President. I intend to enhance communication between the IOMP Officers and our member societies and individual members, improve inter-society communication and encourage communication between individual members. Most of our Regional Liaison groups have been inactive, so we need to find a better way to interact.

How am I going to do this? Well, certainly not without your support. **Firstly, I want to challenge anyone reading this report who is interested in becoming active in IOMP affairs to contact me immediately either by telephone, e-mail, regular mail or fax (see p. 2 for information).** In return, I promise that I will communicate with you and give you something meaningful to do to support the IOMP. This is your Organization (yes, every member of an Adhering National Society is automatically a member of the IOMP), and I want every member to have the opportunity to make a contribution. Secondly, I want the IOMP to make full use of the modern generation of electronic communications systems, especially e-mail, fax and the Internet. These have enormous potential. I realize that not all medical physicists have access to these resources at present, especially those in developing countries, but this is likely to change dramatically over the next few years, so we must take full advantage of this revolution in electronic communication. I know that I will have the full support of our new Secretary-General, Professor Gary Fullerton, on this, because he is the Editor of the Home Page for our next World Congress in Chicago (wc2000.org) which has as its main theme "harnessing information technology." In my discussions with Gary since his election in Nice, he has made it clear that he wants to take full advantage of both wc2000.org and the IOMP Home Page (iomp.org) to disseminate information and to enhance communication between medical physicists worldwide. Give us your support and I am sure that he will be successful.

Finally, let me on your behalf express our sincere thanks to Professors Boddy and Svensson for their untiring efforts on our behalf serving as President and Secretary-General over the past three years. Congratulations to both of them on a job well done! Congratulations also to our two newly-elected Officers, Gary Fullerton (Secretary-General) and Oskar Chomicki (Vice-President).

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

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Past President's Report at IOMP Meeting in Nice

It has been an honour and a privilege to serve as President of the International Organization for Medical Physics. However, it must be admitted that the task was even more arduous and time-consuming than expected in trying to make progress in a number of areas.

You may recall that, at the outset, I proposed a Strategic Plan that was endorsed by Council and the General Assembly for implementation. With hindsight, such an act was probably foolhardy in providing overt criteria against which performance could be judged. However, it is too late now and I must face the music! Consequently, the format of this (my final) President's Report recapitulates the Strategic Objectives in turn and summarizes activities and "progress" for each of them.

Strategic Objective: 1. Operational: *"To review the present operational structure, consider alternatives and make recommendations for continuance or otherwise."* The Operational Structure was reviewed by your Officers immediately after the Second Council Meeting in Rio de Janeiro. We concluded that no funding was available to establish a "permanent" headquarters and staff. In any case, IOMP's limited financial resources should continue to be used for more direct benefits to members, particularly in Developing Countries.

Consequently, IOMP is continuing to rely on individuals and their organizations. However, it must be recognized that this situation may not always pertain in the future.

Strategic Objective: 2. Financial: *"To establish firm financial foundations for IOMP and its activities."* The Vice-President chaired 'Fund Raising' as he reports. The President wrote 48 letters, appealing for support, to European Charitable Bodies and companies. Overall, the response was disappointing and limited in a few cases to providing limited resources for training but with specific conditions attached. This outcome was largely predictable in a period of international commercial and general depression but nevertheless had to be explored. One positive outcome was to attract substantial financial support from British companies, notably British Nuclear Fuels plc, for a specific project; the restoration of the monument to Maria Sklodowska-Curie in Warsaw, Poland.

Two national organizations, the American Association of Physicists in Medicine (AAPM) and the Institute of Physics and Engineering in Medicine (IPEM) (UK) generously provided extraordinary support for Training Courses.

Strategic Objective: 3. Organizational: *"To increase membership of IOMP to include all relevant countries and practitioners."* As reported by the Secretary-General, the national organizations of 10 countries have applied for membership (adherence) since the last Council Meeting in Brazil. The applications have been approved on an interim basis by the Officers of Council and ratification (or otherwise) was sought at the First Council Meeting in Nice. The Chairman of our Developing Countries Committee (DCC) undertook a survey of the needs for training, and status of such training, as he will report. In general terms, however, there were disappointingly few respondents but thanks are due to 11 National Organizations who did so.

Strategic Objective: 4. Training: *"To identify quantitatively and by content and geographical location the training needs world-wide of Medical Physicists; hence to optimize the provision of training opportunities."* IOMP was involved in providing Training Courses in India, Turkey, Italy, South Africa, Morocco, Russia and Nice. Leading Roles were undertaken by AAPM, IPEM, the European Federation of Organizations for Medical Physics (EFOMP) and others, which are gratefully acknowledged.

The limited response to the survey by the Chairman of DCC meant that the true needs for training and the capacity to provide it worldwide could not be established.

Strategic Objective: 5. Equipment: *"To identify needs (not wants) for equipment in developing countries on a world-wide basis but also the capability in repair and maintenance of such equipment."* The Chairmen of the DCC's of both IOMP and IUPESM have pursued this Objective with considerable energy as described in other reports. However, long-standing problems remain of identifying and matching recipients and donors as well as in trans-boundary shipments.

(Continued on page 4)

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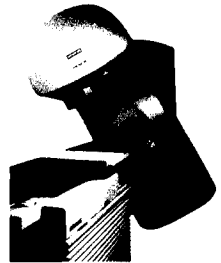
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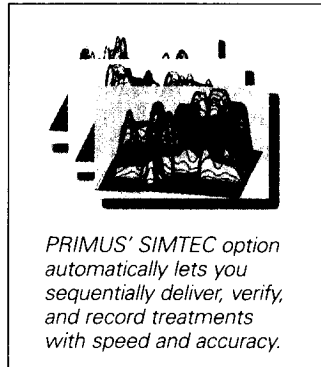
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(Continued from page 2)

Strategic Objective: 6. Status and Organization: "To enhance the status of Medical Physics nationally and internationally including recognition of the profession and proper organization of medical physics services." As President of IOMP, I have written at least once per year to the President of each Adhering National Organization seeking comments, views or proposals on a variety of matters. In response to about 200 letters in 3 years, only a total of 10 replies were received. It is difficult to know how to interpret this response (or lack of it). Self-evidently, we are all heavily committed in our day-to-day duties as Medical Physicists, including your Officers, Chairmen and members of Committees, as well as (in some cases) national responsibilities. These are understandably principal priorities taking precedence. One interpretation is that whatever problems exist worldwide, IOMP has unintentionally overestimated their actual importance, as seen nationally. Another interpretation is that Adhering National Organizations, generally, regard IOMP as important in seeking solutions to their problems or that a common approach would be inappropriate. A third interpretation is that there are few important problems worldwide shared by several National Organizations. Any or all of these interpretations could represent questions about the usefulness and role of IOMP itself and its stature even among its own members.

Negotiations with the International Labour Office seeking inclusion of "Medical Physicist" in the International Standard Classification of Occupations have been undertaken and are continuing. This issue was identified during the Rio Conference by several Developing Countries as being fundamentally important to recognition of their status nationally. Despite very considerable efforts, the outcome remains uncertain with a decision expected later in 1997.

Strategic Objective: 7. Regions of Influence: "To establish 'Regional Liaison Groups' possibly on a continental basis." The establishment of Regional Groups proved partially successful with major activities undertaken in Europe (EFOMP) and the Americas (primarily via AAPM) and important embryonic activity by the Africa region. The other Regional Groups did not function effectively.

Despite problems of communication and evident problems from other commitments, this approach merits continuation but only after some revision.

Several major longer-established National Organizations continue to undertake a catalytic international role, especially in training, for which all members will be grateful. The concept of Regional Groups was to foster and facilitate international communication in Regions which might share common problems as well as a common interest in the promotion of 'local' activities (or mutual support) such as in training. A prime role model, in this respect, is EFOMP involving 30 countries highly effectively and

influentially. Encouragingly, the Regional Group for Africa undertook embryonic activity which was both commendable and merits encouragement. However, other Regional Groups did not function effectively for reasons to be identified and, if appropriate, remedied. There is no doubt that IOMP could maximize its activities and support if all Regional Groups were as well established as EFOMP and operated as impressively.

Strategic Objective: 8. ICSU: "To achieve full membership of ICSU." A review has been initiated by the International Council of Scientific Unions (ICSU) of the relationship with IUPESM. A primary purpose of establishing IUPESM was to achieve Full Membership of ICSU (as a potential source of resources and support for training, scientific conferences etc., especially in Developing Countries). However, to date, IUPESM has achieved only Associate Membership with no material benefit. IOMP and IFMBE, as the core of IUPESM, are participating in this on-going review whose outcome will be known in 1998.

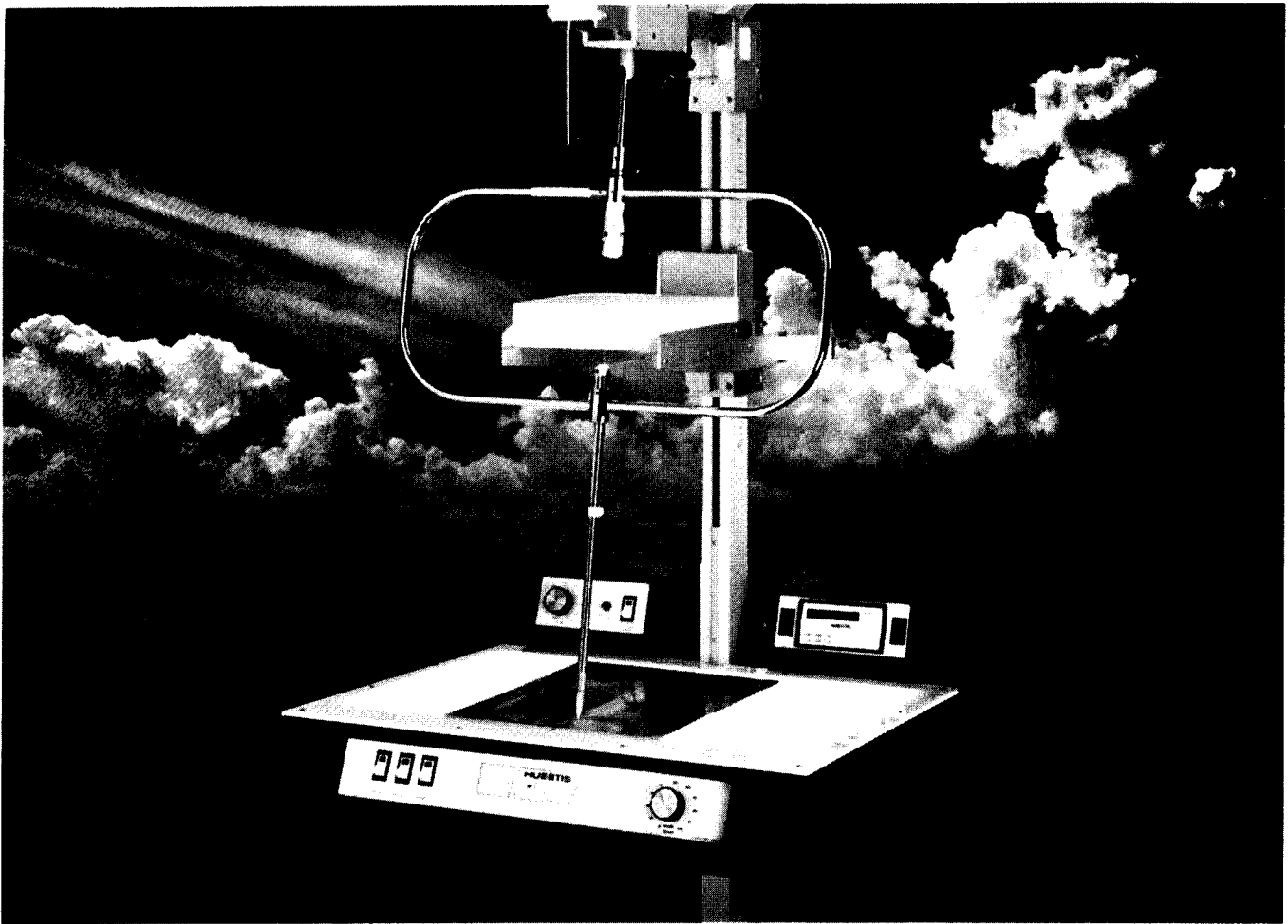
Strategic Objective: 9. Building on Organizational Strengths: "To underpin and build on the excellent work of existing committees, the Editor of Medical Physics World and the Curator of IOMP Libraries for Developing Countries." Excellent work has generally continued through our Committees, the Editor of Medical Physics World and our Curator of IOMP Libraries for Developing Countries, as reported elsewhere. The substantial contributions of these members is gratefully acknowledged. Nevertheless, some problems are evident and need to be addressed, some relating to our limited financial resources. However, others might be operational, such as the need to streamline proposals for Training Courses and their implementation and an apparent delay in developing the role and activities of the Scientific Committee.

Summary

Self-evidently, implementation of the Strategic Plan has met with only limited success, which is counterbalanced unfortunately by the significant failures that have been frankly identified. Perhaps, the greatest value that can be derived will be the lessons to be learned from this experience.

During my Presidency, I have received tremendous support for which I am extremely grateful from our Officers, our Treasurer, Committee Chairs, our Editor of Medical Physics World (who always gently reminded me when the President's Message was due), and our Curator of IOMP Libraries as well as many members in various countries. In particular, I wish to record my special thanks to Professor Colin Orton, as my Vice President, for his constant unflinching support and wise counsel, based on a decade of service to IOMP. Colin has been the helmsman as well as the driving force of IOMP for many years and recognition of his contributions is long overdue. It is, therefore, with the greatest pleasure and utmost confidence that I shall hand over the Presidency to him. With my heartfelt thanks, I wish him every success and happiness as our next President.

Keith Boddy, D.Sc.
Past President, IOMP



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Past Vice-President's Report at IOMP Meeting in Nice

In my role as an Officer of the IOMP for the past decade, firstly as Secretary-General and then as Vice-President, the major emphasis of my activities has been to keep the Organization going. Certainly we made a few improvements, such as establishment of our Libraries, but most of my efforts and thoughts have been concentrated on the more obvious pursuits such as increasing our membership, expanding our educational programs, maintaining our triennial World Congress, etc. Now that I am about to become your President, however, I feel that I need to take a more proactive, rather than reactive, role in the affairs of the IOMP. In order to do this effectively I have come to realize that I must first decide in my own mind what I think the IOMP is all about. Why do we need an International Organization for Medical Physics? Is the IOMP achieving its goals and, if not, why not? I want to devote this Vice-President's Report to giving you my views on this topic and seeking yours.

The IOMP Statutes state that the aims of the Organization are to:

- (a) Organize international cooperation in medical physics and to promote communication between the various branches of medical physics and allied subjects.*
- (b) Contribute to the advancement of medical physics in all its aspects.*
- (c) Advise on the formation of national organizations of medical physics in those countries which lack such organizations.*

These all seem to be very laudible aims but firstly, is this what the IOMP has been doing and secondly, is this really what we want the IOMP to do? The answer to the first of the questions is a limited yes. Yes, we have helped our colleagues to form national medical physics organizations: in the past five years alone I know of 20 such national organizations we have helped to form. Also yes, we have contributed to the advancement of medical physics: we have (we hope) convinced the International Labor Office to recognize *Medical Physics* as a profession. Furthermore, we have helped to advance medical physics expertise in developing countries by establishment of over 70 libraries, sponsorship of workshops/courses, and collaboration with the IAEA in support of their developing countries programs. For example, by means of an announcement in *Medical Physics World* we informed members of opportunities for individuals from developing countries to visit their colleagues abroad, and provided them with a list of such willing hosts. I know of dozens of medical physicists who have taken advantage of these opportunities, most of them supported by IAEA or UICC (Union International Contre le Cancer) funds. We also asked medical physicists to volunteer their time to visit developing countries to share their knowledge. The names of about 50 such individuals were transmitted to the IAEA for their Roster of Qualified Experts and I personally know that many of them have been called to participate in courses worldwide. And again,

yes, we have organized international cooperation and promoted communication. Our Triennial World Congress have been the principle means by which we have achieved this, but we have also had some success with our regional organizations, EFOMP in particular.

Unfortunately, however, I feel we may have failed to achieve our goals as often as we have succeeded. In my opinion, we ought to have been able to sponsor far more workshops and courses than we have. There are two major reasons why we have not: lack of proposals and lack of sufficient financial support. In my opinion, we have relied far too heavily on reacting to proposals for courses and workshops from local groups of medical physicists, rather than playing a leadership role by establishment of "traveling" courses and offering to deliver these at sites all over the world. We need to be proactive rather than reactive. Of course, finances then become a major problem. As mentioned in Professor Boddy's President's Report, we did establish a Funding Resources Working Group in 1994. Prof. Boddy wrote 48 letters appealing for support, but received a very limited response. I too wrote many letters and applied for several grants but was usually thwarted in these efforts due to the lack of a cohesive program of planned courses. Support for a few events was obtained, but not the extensive support for a series of courses for which we had hoped. We have tried to find ways to transport discarded equipment from developed to developing countries, with very little success. We had hoped that our World Congresses would promote interaction between medical physicists and biomedical engineers whereas, in reality, these have in the most part become two separate conferences in the same place at the same time, with very little interaction between the two groups of specialists. Our efforts to interact via the International Union for Medical Physics and Biomedical Engineering (IUPESM) have been almost totally ineffective (see President's Report). Prof. Boddy's effort (in his 1994 Action Plan) to establish more Regional Liaison Groups and to enhance communication between national organizations have been equally unproductive.

In summary, therefore, any euphoria your Officers have due to our many successes must be somewhat dampened by our failures. As your incoming President, just like my predecessor Professor Boddy three years ago, I want to do something about this. I want to find a viable way to make us all proud of being members of the IOMP. Proud of its aspirations and proud of its achievements. I think I know how to do it and that is to make full use of the one resource we have most of: people. I intend to involve more of our members in more of our activities. I am certain that for every member presently involved in IOMP affairs, there are ten more who could, should, and would, become involved if given the opportunity. You will be hearing from me!

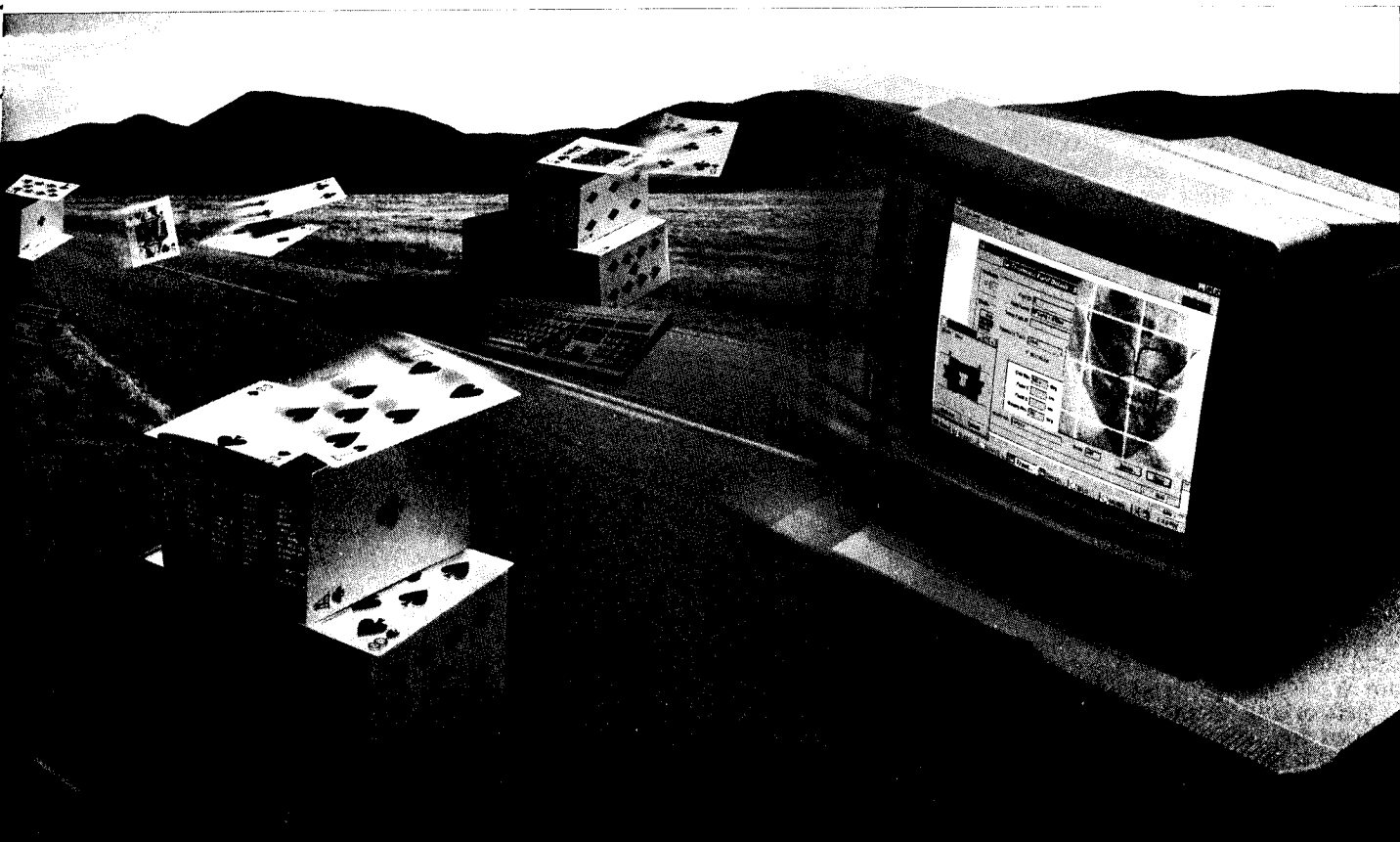
Let me start by asking any and all of you who have ideas as to how the IOMP can better serve its members, or who want to become more involved in our activities, to contact me. I promise I will respond.

Wish me luck and come visit our Homepage at <http://www.iomp.org>.

Colin G. Orton, Ph.D.
Past Vice-President, IOMP

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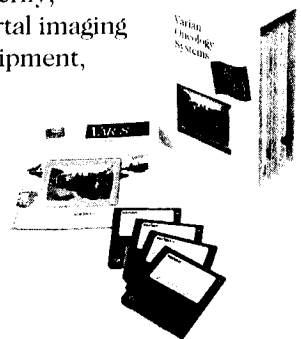
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Secretary-General's Report

New Members

The election of the new members for Algeria, Cuba, Ecuador, Estonia, Republic of Georgia, Lithuania, Morocco, Ukraine and Zambia were ratified unanimously by the Council of the IOMP at the meeting in Nice, France. Following the meeting in Nice the Officers of IOMP completed evaluation of the documents and application of the Biophysics and Medical Physics Division of the Sociedade Portuguesa de Fisica. The Officers officially approved provisional acceptance of the Society to represent Portugal on October 13, 1997. This decision will be presented for confirmation by the IOMP Council in Chicago in July 2000.

Nice Meeting 1997

Professor Pierre Aletti, IOMP Co-President for Nice '97 reported even better than expected attendance at the Nice Congress. There were about 2,600 scientific and professional participants from 70 countries. It is estimated that $\frac{1}{3}$ were medical physicists and $\frac{2}{3}$ biomedical engineers. In addition there were 660 persons from companies participating in the exhibition. Of these commercial attendees 80% were from companies related to medical physics, in particular to radiotherapy. The total attendance of 3,260 is higher than initially predicted and indicative of continuing growth of interest in the triennial meeting.

Rio Meeting 1994

Dr. Almeida presented a final financial report on the Rio de Janeiro meeting. The outcome of the meeting was both scientifically and financially very successful. The IOMP received a profit share of \$20,548 (US dollars) in addition to the overhead expenses paid previously to IOMP per the signed contractual agreement.

Chicago Meeting 2000

Dr. Hendee, Co-President of Chicago '2000, and Dr. Thomas, President of the American Association of Medical Physicists, gave information on preparations. They outlined the strong start of the Organizing Committee of Chicago and the host Society AAPM in preparing for the millennium World Congress. Dr. Hendee emphasized the electronic networking theme that he and his colleagues have developed and referred delegates to the meeting website (<http://www.wc2000.org/>) that is already up and running for details concerning meeting preparations.

Sydney Meeting 2003

Following strong applications from Hong Kong, Korea, Slovenia and Australia, delegates faced a difficult decision but voted together with the Engineering Delegates at the IUPESM General Assembly to meet in Australia.

Election of Officers 1997/2000

Officers of the IOMP for the next three years were elected at the Council Meeting on September 14th in Nice. The Officers are: Colin Orton, President, Oskar Chomicki, President-Elect; Gary Fullerton, Secretary-General. Other elected members are: Anne Dixon-Brown, Treasurer; Azam Niroomand-Rad, Chair of ETC; Andries van Aswegen, Chair of DCC; and Gary Fullerton, Chair of SC.

Important Issue for the Next Three Years

Immediate Past President Keith Boddy now serves as the President of the IUPESM and has agreed to review the status of the Union to determine if this should be continued and if so under what conditions. President Orton pledges to continue strong initiatives for developing countries with strong attention to regional education efforts. Secretary-General Gary Fullerton is focusing on improving communication with the IOMP by making better use of computer networking resources. Treasurer Anne Dixon-Brown will continue to focus on assuring that we have the financial resources to support commitments.

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

Past Secretary-General's Report at IOMP Meeting in Nice

By the September Meeting in Nice I will have served 3 years as an insider at IOMP. My early information on IOMP came from some Swedish colleagues (Brenner, Waldskog and Walstam) who were very active in the Organization during its early phase. Also, I had been the IAEA liaison officer to the IOMP almost 7 years. In spite of this, I must confess that I did not have much knowledge of IOMP when I agreed to be one of the Officers for a three year period. I will try to summarize my impressions.

At present, according to the new directory there are 12,941 members, belonging to the IOMP member societies, an increase of 1,830 since 1994. In addition there are a number of corporate affiliates. The number of IOMP member societies is 64. During the three year period 9 new national organizations have been accepted by the officers of IOMP. These countries are: Algeria, Cuba, Ecuador, Estonia, Georgia, Lithuania, Morocco, Ukraine and Zambia — in all almost 500 new members.

The IOMP is obviously today a large and expanding Organization. The IOMP has several continuously running activities (its official journal and several committees). All these activities must be coordinated by the Officers. This is not a simple task as the Officers are in different parts of the world and partly act separately. Also there is a great need to support both new members and some old members with small resources. This is a problem as IOMP is operating with a small budget. Indeed the administration is carried out totally on a voluntary basis. The secretarial help that is needed by the three officers (President, Vice-President and Secretary-General) and the Honorary Treasurer and the Editor of MPW is covered by their universities.

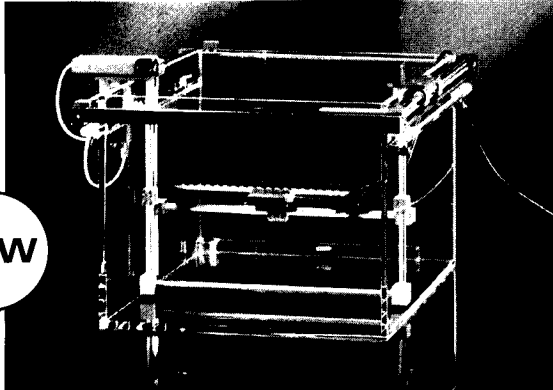
The IOMP office is in principle at the department of the Secretary-General. I can assure that there is a steady stream of fax, e-mail and letters every day. Much of these letters are of pure administrative nature. This means that part of the time that the Officer is setting aside for IOMP work is taken away by unnecessary readings. I think that in the future the IOMP must be supported by some regular administrative (secretarial) help at least in the office of the Secretary-General. This could solve part of the problem. Unfortunately this requires more money.

Our field is certainly in an exciting development. IOMP has an important role to assist in cooperation in professional matter, in training, etc. A strong administration is therefore needed. Resources are however needed to create such structure. I wish future Officers of the IOMP success in operating the Organization.

Hans Svensson, Ph.D.
Past Secretary-General, IOMP

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Treasurer's Report

The audited balance sheets for the UK and USA accounts for the period 1 January 1995 to 30 June 1997 are shown below. In summary it can be seen that the total income for this period amounted to a sum of approximately US\$ 120,000, of which around 60% was awarded as travel grants to assist 37 delegates from 23 developing countries to attend the 1997 World Congress, 12% on training programmes in the developing countries, 7% on supporting the libraries programme, 12% as a loan to the Nice World Congress, and 7% in fees to IUPESM. The remaining 2% was spent in operating costs such as bank charges, stationery and postage costs. It should also be noted that there were some 25 late applications for travel grants to Nice from 7 countries which the IOMP was unable to offer any assistance, but some of these were granted reduced registration fees by the organizers of the Nice Congress.

The 1994 World Congress in Rio de Janeiro was a financial success and the total IOMP income was US\$35,000.

It was agreed at the IOMP Council Meeting in Nice that the subscription fees for the years 1998 to 2000 would be:

Country Members

US\$55 per 25 members for the year 1998, increasing by US\$5 per 25 members for the two subsequent years. As

in previous years, countries having less than 10 members can apply to the IOMP to use their subscription fees to assist with internal training programmes organized by their national societies.

Corporate Members

US\$750 for 1998, increasing by US\$100 for the two subsequent years. Corporate members can choose to support the work of the IOMP for the developing countries or to sponsor a particular training programme or meeting in a particular country.

There are still some countries that have to pay their subscription fees for 1996; this may simply be that reminders I send do not reach the correct officer of the national society, since these are constantly changing, so if your country appears on the list below I should be grateful if you could remind your officers that the fees are still outstanding:

Indonesia, Iran, Lithuania, Malaysia, Mexico, Pakistan, Rumania, Russia, Slovenia and Sudan.

Please do not hesitate to contact me should you have any queries regarding any of the financial aspects in this report.

Ann Dixon-Brown, MS
Treasurer, IOMP

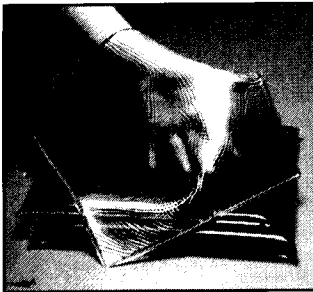
IOMP BALANCE SHEET — USA Account — 1 January 1995 - 30 June 1997

	1995		1996		1997 1/1/97 - 30/6/97	
		US \$		US \$		US \$
Opening Balance		31,266		41,537		38,145
Income:						
Subscriptions: Country Members		443	Rio de Janeiro			
Corporate Members		1,050	Profit	15,000		
Donations:/Other	MPW	10,370	Nucletron	500		
	Other	438	Clarke Research	200		
Bank Interest		935	CMS	800		454
				729		
Total Income		13,236		17,229		454
Expenditure:						
Libraries Programme:		1,587		3,901	World Congress	2,471
Training Programme:	Moldova	900			Nice	31,400
Loans for World Congress			Loan to Nice	15,000	Cuba Course	1,000
Stationery		455		240	Ext. Comm. Activities	413
Bank Charges/Other:		23				54
			MPW	1,480	MPW	685
Total Expenditure		2,965		20,621		36,023
Closing Balance		41,537		38,145		2,576

IOMP BALANCE SHEET — UK Account — 1 January 1995 - 30 June 1997

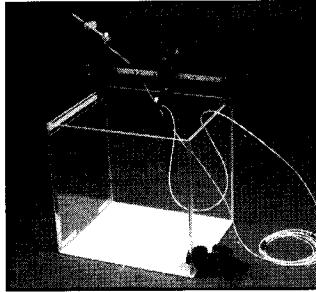
	1995		1996		1997 1/1/97 - 30/6/97	
		£ (GBP)		£ (GBP)		£ (GBP)
Opening Balance		1,179.48		5,114.59		16,024.13
Income:						
Subscriptions: Country Members		7,651.62		11,283.71		3,700.31
Corporate Members		3,079.07		4,625.34		3,173.90
Donations:					UK Donations:	
					Institute of Physics	2,000.00
					Institute of Physics	3,000.00
					& Engineer in Medicine	99.11
Bank Interest		55.42		99.31		
Total Income		10,786.11		16,008.36		11,973.12
Expenditure:						
IUPESM Subscription		2,500.00		2,500.00		
Training Programme:	India	1,629.89	South Africa	703.43	World Congress	24,057.39
	Turkey	961.53	Morocco	1,562.68		
	Italy	1,597.44				
Other:					Repay. Corp. Subs.	407.52
Postage & Packing				132.82		26.84
Bank Charges (including costs of rising overseas cheques & electronic bank charges)		162.14		199.89		287.98
Total Expenditure		6,851.00		5,098.32		24,779.73
Surplus (Deficit) for year		3,935.11		10,909.54		(12,806.61)
Closing Balance		5,114.59		16,024.13		3,217.52

MEDICAL PHYSICS TOOLS



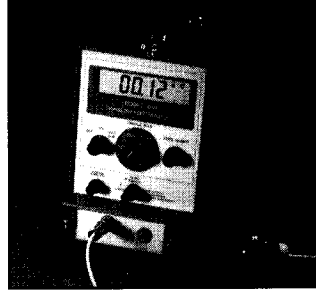
Bolx-I and Bolx-II bolus

These bolus sheets are made from a solid, homogeneous, tissue-equivalent gel with a density of 1.03g/cc. Ideal for radiotherapy applications above 1MV. Bolx-I is encased in a tough layer of thin plastic skin. Bolx-II is "skinless" for greater conformity to steep body contours.



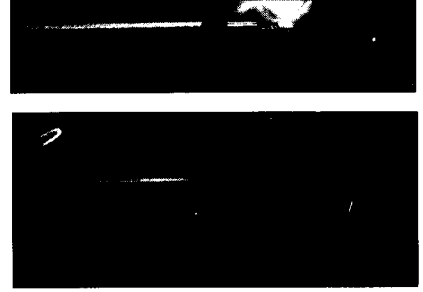
QuickScan™ water scanner

This CRS compact 2D water-scanning phantom meets all the requirements for external beam quality control without the bulk, cost, and complexity of larger water phantoms. High-precision components. Software-supported for quick, accurate, and easy quality checks of treatment machines.



Dosimetry electrometer

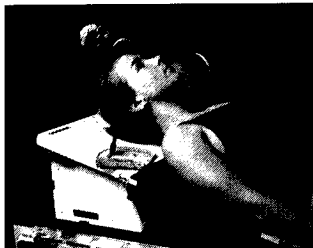
Popular reference-grade electrometer features front-end amplifier/feedback modules matched to the ionization chamber in use for optimum operating conditions and range for that chamber. Measuring units include charge, current, dose, and dose rate. Battery-powered.



Exradin™ ionization chambers

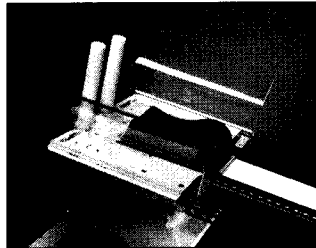
These high-precision chambers have found acceptance worldwide as the physicist's choice for radiation beam quality control and dosimetric measurements in radiotherapy, radiology, and research. Available in models from a miniature (0.05cc) shonka thimble chamber to a large 16-liter low-level spherical chamber.

PATIENT POSITIONING



Breastboards

Our breastboards truly "set the standard" for accurate and repeatable patient set-ups and patient comfort. Our popular MT-250 breastboard (shown above) features rigid, radio-translucent carbon fiber grid treatment panels and your choice of head supports, arm positioning options, and elevation systems. **Ask about our NEW lightweight, durable carbon fiber breastboard**



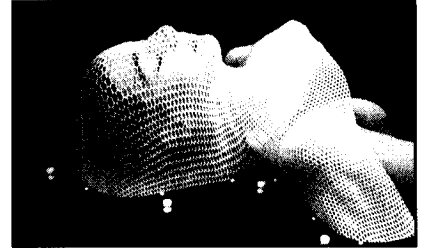
Wing Board™

This lightweight, comfortable, economical device supports a patient's arms and elbows at approximately 30° with hands overhead. Shown here mounted to our MT-250 breastboard for additional patient set-up flexibility and comfort. The Wing Board is also available with an overhead arm positioner/hand grip for enhanced positioning accuracy.



Uni-frame®

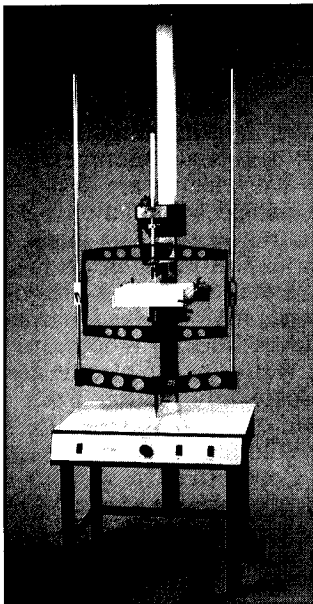
The easiest-to-use head and neck positioning system on the market, the Uni-frame system features low-temperature thermoplastic bonded to a rigid U-frame for precision and control. Softened thermoplastic becomes rigid when cooled, creating an accurate mold of the patient's facial contours. Full line of baseplates available. New snap-in reloadable Uni-frame saves time and money!



Type-S™ head & shoulders system

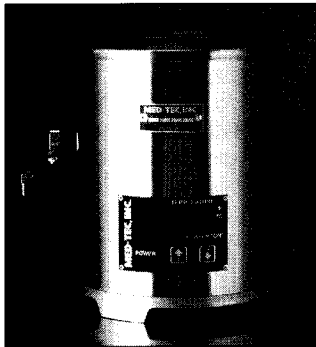
This unique new system provides maximum head and upper body fixation by capturing the head, neck, and shoulders under a continuous thermoplastic sheet. Features snap-in reloadable thermoplastic and a carbon fiber grid baseplate, making this the most cost-effective, accurate, and user-friendly head and shoulders system available.

CUSTOM BLOCKING



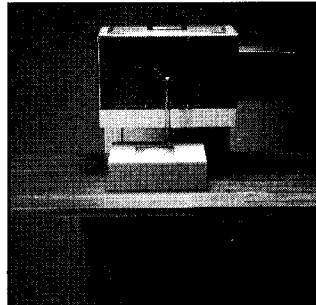
FC/2000 hot-wire cutter

Advanced features and precision construction make our new FC/2000 hot wire cutter easy to operate. Minimizes the need for tolerance adjustments to ensure precision foam blocks.



Production alloy melters

Our durable shielding-alloy melters have a heavy-gauge stainless steel inner and outer wall construction, full-wrap ceramic heaters, and heated no-drip ball-valve dispenser. Both 1.5 gallon and 3.0 gallon melters feature exclusive push-button programming temperature control and digital temperature readout. Can be used with either 158° F low-melt alloy or 203° F medium-melt cadmium-free alloy.



Block casting systems

An efficient system for producing quality shielding blocks, our MT-550 casting system features a solid-state electronic alloy melter mounted on a flat refrigerated cold plate. The alloy melter has a digital readout, push-button programming, and ball-valve dispenser. Cooling plate is precision-surfaced and will accommodate 3-4 blocks at once. Optional built-in vibrator improves block homogeneity and speeds up the block solidification process.



Shielding alloy and Flat-foam™

We offer certified composition shielding alloy in both 158° F low-melt and 203° F medium-melt (cadmium free) at guaranteed lowest prices. Our Flat-Foam Dow® oncology foam is a high-quality 40 PSI foam designed to provide a flat and parallel surface — essential to the shielding block pouring process. Plus, we carry a complete line of mold room equipment and accessories.



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Head of Corp. Communications
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Fax: 44-19467-24889

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Worldwide Product Development
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Vice President
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Science Committee (SC) Report

In Rio de Janeiro Dr. Boddy, President of IOMP, founded a new "Science Committee" for the Organization. At the time it was not entirely clear what Prof. Boddy expected the Committee to achieve. Members of the Committee have since discussed possibilities with many medical physicists from across the world concerning what the IOMP could do to promote the "science" of our speciality.

Science — *systematized knowledge derived from observation, study and experimentation carried on in order to determine the nature or principles of what is being studied; a branch of knowledge or study, especially one concerned with establishing and systematizing facts principles and methods, as by experiments and hypotheses.*

In discussions with Dr. Boddy it was clear that he wished to involve both developed as well as developing nations in stronger participation in forming the scientific basis of medical physics. The resources to achieve this end for the IOMP have largely revolved about the World Congress up to this time. The Committee communicated with the organizers of the Nice Meeting concerning the interests and responsibilities of the Science Committee but have no response to date as the Nice Program Committees are rightfully concerned with the demands of organizing the upcoming meeting. As a result the Science Committee has focused on new avenues to achieve the assigned ends. The Committee is working (1) on establishing a method to evaluate the impact of the scientific program on each World Congress, (2) on creating an electronic network to promote the science of medical physics and (3) on a proposal for authorization of funding for a study of the status of medical physics science with recommendations for the future. It is proposed that the results of this study be presented at the year 2000 World Congress in Chicago.

To facilitate these efforts the Chairman of the Science Committee, Gary Fullerton, accepted the role of Director of Advertising for the World Congress on Medical Physics

and Biomedical Engineering, Chicago '2000. The Organizing Committee for Chicago '2000 has agreed to focus on the theme of electronic communications and networking to improve medical physics and bioengineering in the 21st Century. In conjunction with the advertising program a Web Site (<http://www.wc2000.org/>) was created to promote both the meeting and the theme of electronic networking. WC2000 is already up and running but will require much work over the next three years to achieve design goals. This web site provides a vehicle to support a science program initiative without significant expense to IOMP. The Editorial Board for WC2000 consists of three medical physicists and three biomedical engineers who represent the interests and views of the hosts of Chicago 2000. It is proposed that the IOMP Science Committee serve as a consultant to this Editorial Board for promoting the international science interests of IOMP.

The WC2000 site has nine major categories or topics of which only the first three will be directly related to the Chicago '2000 Congress. The remaining six categories (1. Technology Market Place, 2. Education Resources, 3. Research Resources, 4. Professional Resources, 5. Job Search, and 6. Gateways to Knowledge) are designed to promote rapid exchange of critical information between medical physics sites all over the world. The intent is to make up-to-the-minute information available to medical physicists in all settings. Information for the site will be maintained on a computer at AAPM Headquarters in Washington, D.C. by Webmaster Michael Woodward who is an AAPM employee. The WEB site can also be used to gather and statistically evaluate information from electronic questionnaires filled out by visitors to the site. Thus the design of WC2000 is a tool to implement the proposed goals of the IOMP Science Committee. In addition lines of communication have been opened with Medical Physics World and Electronic Medical Physics World with a meeting with the Editors to assure smooth integration of efforts.

Gary D. Fullerton
Chair, IOMP SC

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PUBLISHED FOR IOMP

EDITORIAL COVERAGE

- Information exchange between medical physicists worldwide, including IOMP member nations.
- Reviews of medical physic national organizations and activities.
- Reports and announcements of international conferences and courses.
- Comprehensive Calendar of Events in the International Medical Physics Community.
- Reports from IOMP Officers, Committees, etc.
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- Distributed to all medical physicists in the 64 IOMP member nations plus over 14 other non-member countries.
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News items, calendar events and advertising inquiries should be directed to
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3800 Reservoir Road, N.W., Washington, D.C. 20007 U.S.A.
Tel: (202) 784-3334 FAX: (202) 784-3323

Developing Countries Committee (DCC) Report

Dr. M. S. S. Murthy, Chair of the DCC, reported the following at the IOMP Meeting in Nice. During the past three years the Developing Countries Committee has been active in collecting information and disseminating the same to the concerned persons. As for the availability of radiotherapy equipment is concerned, a survey revealed that Co-60 therapy machines will be available for some years to come. While some companies have wound up manufacturing these units, others such as Picker, Theratronics, etc. have plans to expand their manufacturing capacity. In fact Theratronics has already started assembling/manufacturing their Phenix Unit in India. China produces its own Co-60 machines. However, in the developed countries, linear accelerators are generally replacing cobalt machines.

The DCC has also collected information on the availability of equipment for donation, the status of Medical Physicists in developing countries, and data on medical physics departments from developing countries which would like to twine with medical physics departments in developed countries. The information collected has been analyzed and published for wider circulation in the Medical Physics World. In our efforts to obtain equipment for donation, Dr. Oberladstatter of Innsbruck has offered to donate a gamma camera and the associated computer system. This was published in **MPW Vol. 11, No. 2, 1995**. Ten requests were received for the gamma camera. These requests have been processed and a recipient is selected. Letters have been written to both the donor and recipient to make arrangements to transport the equipment and conduct performance tests on the installation of the unit. Similarly Dr. Ian Beange from Raigmore Hospital, Inverness has offered to donate a Cobalt-60 teletherapy unit. This offer was published in the **MPW Vol. 12, No. 1, 1996**. Only two enquiries, both from India were received in this regard. Since the regulatory authorities in India have strict controls on the entry of used radiotherapy machines to the country, the Indian inquiries were not further scrutinized.

As for the status of Medical Physicists are concerned, about 12 countries responded to the questionnaire. A summary of the responses was published in **MPW Vol. 13, No. 1, 1997**. In nearly half of the countries Medical Physics is not recognized as an independent discipline and no regulatory exists that a Medical Physicist shall be appointed in a radiotherapy department. Even though the majority of countries have facilities for a masters degree in Medical Physics, very few have opportunities for career development.

Ten Medical Physics departments from developing countries have requested to twine with their counterparts in developed countries. A summary on the survey on twinning was published in **MPW Vol. 12, No. 1, 1996**. Medical Physics departments in developed countries are being contacted in an attempt to find suitable partners. I am happy to state that this has already resulted in twinning between Radiation Physics Department University Hospital, Umea, Sweden and Laboratory of Biophysics and Medical Physics of "Alexandru I. Cuza" University at Rumania. It is hoped more such twinings will be realized in the future. The IOMP Treasurer Ms. Ann Dixon-Brown is actively involved in this venture.

Another important outcome of this survey was that physics from developing countries have little access to current literature in Medical Physics. To some extent this has been met by establishing IOMP libraries around the world. Medical Physicists would like to identify journals in which they can publish their work. In addition to the well known journals, the following could be of interest.

- i) *Physica Medica*
Editor: Prof. A. Del Guerra
Physics Department, University of Ferrara
Via Paradiso 12,
J-44100 Ferrara, Italy
E-mail: physmed@ferrara.infin.it
- ii) *Journal of Medical Physics*
(Quarterly publication of the Association of
Medical Physicists of India)
Editor: Dr. P. S. Iyer
c/o Radiological Physics & Advisory Division
Bhabha Atomic Research Center
Mumbai — 400085, India
- iii) *Reports on Practical Oncology*
(Published for the Greatpoland Cancer Centre)
Editor: Dr. Julian Malicki
Greatpoland Cancer Centre
61-866 Poznan, Poland

M. M. S. Murthy, Ph.D.
Chair, IOMP DCC

The Chair of the DCC for the next term of office is Andries van Aswegen, Ph.D. He invites anyone who would like to be actively involved in matters concerning the developing countries to contact him at the following address. Biophysics Department, University of the Orange Free State, P.O. Box 339, Bloemfontein, 9300, South Africa. Tel: 27 51 4053158, Fax: 27 51 4488610, E-mail: gnbiava@med.uovs.ac.za.

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Education and Training Committee (ETC) Report

The major activity of this Committee during 1994-1997 has been the review of applications for financial support and sponsorship by IOMP, of workshops/training courses in Medical Physics. The following programs were approved after a mailed vote was taken by the Committee, and forwarded to EXCOM for their final action.

1994:	
IRAN (AAPM/IOMP)	Int'l Scientific Exchange Course/Workshop on Radiation Oncology Physics Tehran, Iran, May 22-26, 1994 \$2500
EFOMP	Summer School in Radiophysics (Radiodiagnosis) Nancy, France, June 19-25, 1994 \$2000
1995:	
CUBA	First Cuban Congress in Medical Physics during "BioEngineering and Medical Physics '95" Havana, Cuba, April 26-28, 1995 \$1000
INDIA	Symposium on Quality Assurance and Patient Dose Reduction in Imaging (Sponsored by All India Institute of Medical Sciences and AMPI) New Delhi, India, Nov. 1995 \$2500
TURKEY (AAPM/IOMP)	Int'l Scientific Exchange Course/Workshop on Radiation Oncology Physics Istanbul, Turkey, Sept. 11-15, 1995 \$1500
EFOMP (IOMP/ICIP/IAEA)	Second School of Radiophysics (Radiodiagnosis) Trieste, Italy, Oct. 23-27, 1995 \$2500
1996:	
EFOMP (IOMP)	Summer School in Radiophysics (Radiotherapy) Bratislava, Slovak, June 16-21, 1996 Chairman recommended funding without review by full committee — due to short notice \$2000
MOROCCO (AAPM/IOMP)	Int'l Scientific Exchange Course/Workshop on Radiation Oncology Physics Rabat, Morocco, Sept. 30-Oct. 4, 1996 (Request for funding received in late July, together with IOMP membership application) \$2500
1997:	
EFOMP (IOMP)	Advanced School of Radiophysics "Radiological Imaging in the 21st century: The expanding role of the Medical Physicist" Nice, France, Sept. 8-12, 1997 \$3000
RUSSIA (AAPM/IOMP)	Int'l Scientific Exchange Course/Workshop on Radiation Oncology Physics Moscow, Russia, June 16-20, 1997 \$2500

The Committee has encouraged all interested countries to submit proposals for partial funding of educational programs that they would like to hold in their regions. It has also been emphasized that there is a need for early submissions (18-24 months) of proposals to assure availability of IOMP funds.

In early 1995, at the request of the IOMP President, Dr. Keith Boddy, the Chairman submitted two long-term projects that need exploration with the IAEA for possible collaboration and funding.

- Three one-week courses per year for medical physicists (one each on Physics of Imaging, Physics of Radiation Oncology and Medical Health Physics) to be held in strategic locations in different parts of the world.
- Development of a uniform course content for short courses/workshops, for Medical Physicists who need to practice in third world (developing) countries, in the areas of Physics of Imaging, Physics of Radiation Oncology and Medical Health Physics.

The Chairman, during a visit to the IAEA in Vienna in May 1995 for participation in a Conference on Quality Assurance in Radiotherapy, met with several officials from the Divisions of Human Health and Technical Co-operation Programmes. We discussed potential areas for collaboration. Their programmes are identified and budgeted several years ahead of time and as such any further discussions could impact only after the year 2000.

The Chairman also has initiated discussions with the Head of the Dosimetry/Physics Section of IAEA regarding the development of uniform course contents. In April 1997 the Chairman was invited to visit Vienna as a consultant to the IAEA to prepare a "Syllabus on Radiotherapy, Physics." This has been completed and is under review by IAEA. A suggestion has been made that there be interaction with other Divisions of the IAEA to prepare appropriate syllabi in other areas of Medical Physics as well. There is a need to officially firm up close collaboration between IOMP and IAEA.

There is also a need for close interaction between the different Regional Groups that have been established within the IOMP to help promote educational activities in all regions of the world. Also, IOMP need to make more funds available. IOMP established in 1994, a Working Group on Funding Resources with Dr. Colin Orton as Chairman. It is my understanding that some initial attempts have been made in requesting funding from manufacturers for yearly short courses sponsored by individual companies.

The Committee, though with limited funds, has been very active in promoting the mission of the IOMP. It is hoped that education activities would continue to play an even greater role in the years ahead.

N. Suntharalingam, Ph.D.
Chair, IOMP ETC

The Chair of the ETC for the next term of office is Azam Niroomand-Rad, Ph.D. She invites anyone who would like to be actively involved in matters concerning the education and training of medical physicists in developing countries to contact her. (Address: see Editorial Board on page 2).

Int'l Scientific Exchange Course/Workshop in Russia

The sixth* AAPM Scientific Exchange Course/Workshop in Radiation Therapy Physics was held successfully in Moscow, Russia, June 16-20, 1997. The Course/Workshop was co-sponsored by the International Organization for Medical Physics (IOMP) Education and Training Committee. The objectives of this Course/Workshop were to exchange information concerning medical physics profession and to present advanced radiation therapy physics to clinical physicists in Russia.

This Course/Workshop was offered in collaboration with the Association of Medical Physicists of Russia, AMPR, at the Cancer Research Center in Moscow. Professor Valeriy Kostylyov, President of AMPR was the Host Director and Dr. Tatiana Ratner was the organizer of this Course/Workshop. The AAPM faculty were: Drs. Anatholy Dritschilo, Leroy Humphries, Faiz Khan, Azam Niroomand-Rad, Bhudatt Paliwal, James Purdy, and Theodore Thorson. About 55 medical physicists and radiation oncologists attended this Course/Workshop.

The Course/Workshop also contained calibration of photon and electron beams as well as chamber calibration intercomparison. A total of 31 Khan's books, with author's discount, and 10 AAPM Monograph No. 19 were also donated to the major radiation therapy centers in Russia. Certificates of Participation were presented to the participants and Certificates of Appreciation were presented to the faculty members. The certificates were signed by Drs. Thomas, AAPM President, Azam Niroomand-Rad, AAPM ISEP Chair, Keith Boddy, IOMP President, and Velery Kostylyov, Host Director.

The local expenses were supported by the Institute of Physics and Engineering in Medicine, IPEM, in U.K. (on behalf of IOMP), Varian, local officials, and Host Institution. The travel expenses of the faculty were financed by funds provided by the AAPM and vendors in US. Corporate Sponsors (+\$1,000) were CNMC Company, Computerized Medical System, MED-TEC, Inc., PTW, Siemens Medical System, and Varian Associates. Contributors (\$100-499) were Argus Software, Best Industries, Inc., K & S Associates, Inc., and Nucletron. Corporate Sponsors were offered a table-top space for exhibition of their products in a room adjacent to the lecture hall. We are grateful to these companies for their generous contributions. We also wish to acknowledge the commitment and effort of Dr. Ratner and Ms. Ronya Likhovetsky in the past few years in organizing and implementing this Course/Workshop as well as the effort of the translators and members of local organizing committees in Russia. We also like to thank the AAPM faculty for their time and effort in this endeavor.

Azam Niroomand-Rad, Ph.D., Chair
AAPM International Scientific Exchange Programs

*Pakistan (1992), Poland (1993), Iran (1994), Turkey (1995), Morocco (1996)

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IOMP Libraries Program Report

Cathy Alektiar, MS, resigned as curator of the libraries program, effective April 1, 1997, after serving in this office for seven years. Marilyn Stovall, Ph.D., University of Texas M. D. Anderson Cancer Center, Houston, TX, assumed duties of curator of the libraries program on July 15, 1997. All files and data have been transferred to Dr. Stovall. The program has been inactive during the transition months, but is ready to resume activity. In order to advertise the activities of the program, there are plans to add information to the Internet World Wide Web pages of the AAPM, IOMP, and the University of Texas M. D. Anderson Cancer Center.

Donation rates are increasing. For the calendar year 1994 there were 56 donations, for 1995, 167 donations; and for 1996, 245 donations. Activity in 1997 has been slow because of the change in curator, but there were 23 donations in the first half of the year and with the interest so far, donations should increase last quarter of 1997. Recently, forms and instructions were mailed to ten people who wish to donate materials. The donations vary widely in size, from 30 to more than 300 pounds each.

The program currently has 80 active libraries, with three requests for new libraries pending approval. We plan to contact all active libraries soon to confirm addresses, contacts and needs.

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

Medical Radiation Physics in Croatia

Introduction

In today's medicine in Croatia the rather wide scope of radiation physics applications, researches and educational activities confirms that the collaboration of technical (i.e. physical and engineering) professions with other health care staff in advanced medicine here has always had a pronounced tradition. However, the number of such collaborations has never been very high. The radiation physicists and clinical engineers involved in medical radiation applications are mainly concentrated at University Clinical Hospital Centres (UHC), General Hospitals (GH), and specialized Clinics for Tumours (SCT), while the physicists engaged in the field of radiation protection and safety work in some research institutes in Zagreb. Currently, nobody is dealing exclusively with diagnostic radiology, but some are engaged periodically in supervision and control of the X-ray equipment. They are mainly the physicists from the Institute for Medical Research and Occupational Health (IMR), where the service for granting operations of the radiation facilities and the personnel dosimetry laboratories is situated. There is also a dosimetry department in the scientific research Institute "Ruder Boskovic" (IRB). At the present time the Croatian state service for standards in radiation dosimetry is in the process of being formed. Previously (in former Yugoslavia) there existed a state regulation based on IEC norms which has been applied continuously in Croatia until the new regulation has been set up. Now, the approximate number of radiation physicists involved in medical treatments in Croatia is about 30: **radiotherapy (RT)** — 11, **nuclear medicine (NM)** — 11, **radiation protection (RP)**—8 who are working in the following institutions:

Zagreb:

Clinic of oncology and radiotherapy UHC "Rebro" (RT - 2),
Gynaecological cancer centre (Rt - 1),
Clinic of nuclear medicine UHC "Rebro" (NM - 5),
Clinic of nuclear medicine and oncology UCH "S. Milosrdnice" (NM, RT - 3),
Clinic for tumours (RT - 3),
Department of nuclear medicine New Univ. Hospital (NM - 1),
Laboratory for dosimetry IMR) RP - 5),
Department for radiation protection IRB (RP - 3),

Rijeka:

Clinic of nuclear medicine and oncology UHC (nm, RT - 2),

Medical Faculty (NM, RT - 2)

Split:

Department of oncology and radiotherapy GH, (RT - 1)

Osijek:

Department of oncology and radiotherapy GH, (RT - 1)

Zadar:

Department of oncology and radiotherapy GH, (NM - 1)

National Society

As the number of medical radiation physicists in Croatia is relatively low, and there is often overlap between the various engineers of similar professions (such as electro

and computer engineers) in clinical hospitals, medical research institutes, specialized laboratories and other skilled areas dealing with health care, we decided to join the Croatian Medical and Biological Engineering Society (CROMBES). The Society was established in January 1992 in Zagreb. In September 1993 the application of CROMBES was accepted and the Society became a member of the International Federation for Medical and Biological Engineering (IFMBE). Now CROMBES has two Divisions: Medical Physics Division (MPD) and Clinical Engineering Division (CED) and about 120 members in all. It has to be pointed out that the members can also be experts from other professions engaged in similar work, for example medical doctors. The MPD was accepted through CROMBES as a member of the European Federation of Organizations for Medical Physics (EFOMP) from October 1993 and our CED became automatically (also through CROMBES) the member of IFMBE-CED. So far our young Society and its MPD has gathered almost all the physicists in medical radiation in Croatia.

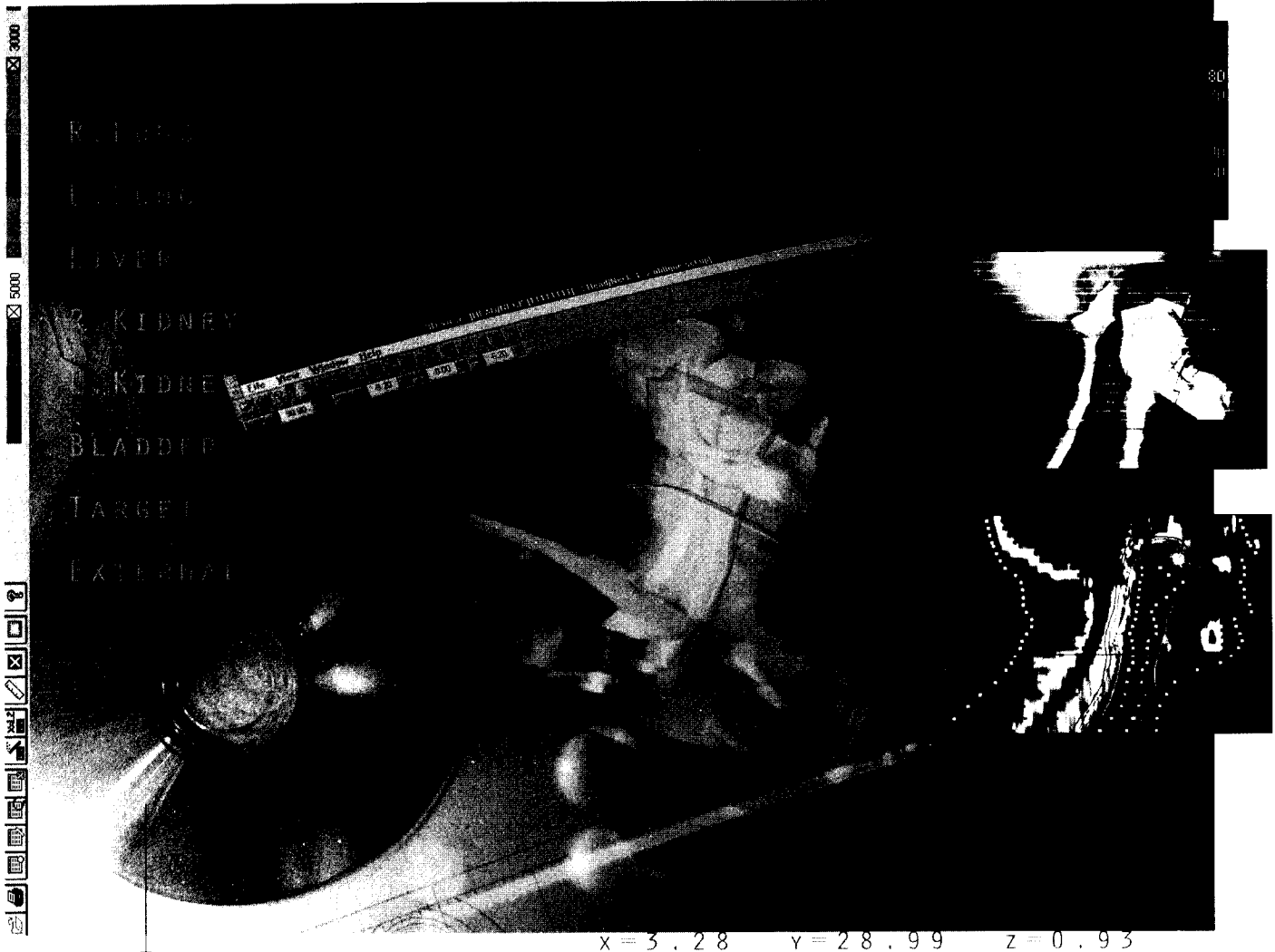
Medical Physics Division Activities

MPD extends the knowledge of its members and of other professions such as doctors and technicians during their specialization in some associated branches of medicine (radiotherapy, radiology, nuclear medicine), exchanges the experiences with clinical engineers dealing with radiation equipment and instrumentation, organizes symposium in connection with Medical Institutions, the Croatian Society for Communications, Computers, Electronic Measurements and Automation (KOREMA) and participates in the meetings of the Society for Irradiation Protection. The principal aim is keeping the members and others with an interest in medical radiation physics in touch with new developments in the field, maintenance of the radiation standards and quality assurance (QA), as a complex process involving all medical and physical steps. Some of the medical radiation physicists have been collaborating in scientific projects, researches and conferences with international organizations (IAEA and ESTRO) or some foreign societies (e.g. Deutsche Gesellschaft fur Medizinische Physik (DGMP) — workshop on physical aspects of Total Body Irradiation — TBI). These were highly successful in including the highest medical standards of radiation applications, for example, in introducing the TBI method in connection with Bone Marrow Transplantation, in establishing the Centre for Prevention of Consequences in Nuclear Accidents, in participating courses concerning the hypothetical accidents in a nuclear power plant, and so on. We also answered the questionnaire on radiotherapy QA requested by the EFOMP Scientific Committee. The physicists working in Clinical and University Hospitals take part in some hours of clinical Oncology & Radiotherapy and Nuclear Medicine lectures at the Faculty for Natural and Mathematical Sciences (FNMS), the Faculty of Medicine and the Faculty of Electrical Engineering (FEE), introducing the students to radiation physics principles and measurements.

Education of Medical Physicists

Study of medical physics at an undergraduate level has not been organized in Croatia until now. However, there is a very famous four year study of physics at the Faculty for natural and mathematical sciences in Zagreb, where

(Continued on page 23)



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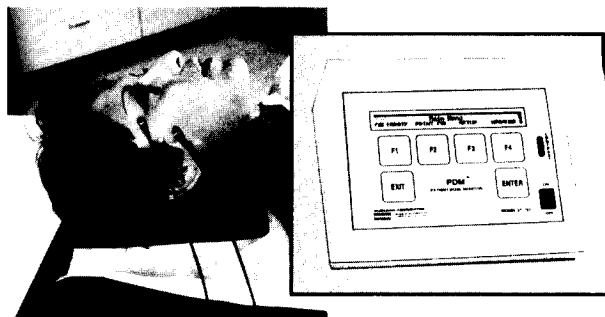
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Miscalibration of Co-60 Source at Costa Rica

On August 22, 1996 a Co-60 source was replaced at the San Juan de Dios Hospital. A calculational error was made in determining the dose rate. The miscalculation resulted in administration of significantly more radiation than was prescribed. A total of 113 patients were involved. The error in the calibration was realized almost a month after the calibration. In October 1966 an initial evaluation of the accident was made by the Costa Rican Ministry of Health and personnel from the Pan American Health Organization and confirmation of the overexposure was made. The Costa Rican Government requested assistance of the International Atomic Energy Agency to evaluate the radiological event. The IAEA expert team evaluated the event from 7-11 July 1997.

The team examined and evaluated 70 of the 74 patients who remained alive. It was concluded that at the time of the review four patients were suffering from catastrophic consequences and another 16 had major adverse effects due to the overexposure and are at high risk in the future. Twenty-six had effects that were not severe but at some risk of future effects. Twenty-two patients had no discernible effects. This was because many of them had received only a small percentage of their therapy with the replaced source. At least 2 patients were underexposed and four were not examined.

This has been a very sad experience for Costa Rica and a terrible one for the patients involved. It is extremely important that administrators in hospitals realize the importance of having qualified professionals doing the calibrations of radiotherapy sources. The radiation protection legislation in each country has to be reviewed and updated to ensure that certified and trained medical physicists are in charge. A comprehensive quality assurance program in radiation therapy departments is important in order to prevent accidents such as this.

Reported by Patricia Mora
University of Costa Rica

Calendar of Events

2-6 March 1998: A Practical and Theoretical Course in Radiotherapy Physics. Part B: Brachytherapy, Radiobiology and Treatment Machines.

The Joint Department of Physics, The Royal Marsden NHS Trust, Sutton, Surrey, SM2 5PT, UK. (Dr. Alan Nahum, [Tel: + 44 181 642 6011, ext. 3309, Fax: + 44 181 643 3812, E-mail: alan@icr.ac.uk]).

18-20 June 1998: 44th Annual Meeting of the Canadian Organization of Medical Physicists and the Canadian College of Physicists in Medicine, University of Western Ontario, London, Ontario, Canada. (Mrs. Brigid McGarry (COMP Secretariat), 11328-88 Street, Edmonton, Alberta T5B 3P8 Canada. [Tel: 403-479-1110, Fax: 403-474-5894, E-mail: bmcgarry@compusmart.ab.ca]).

6-9 November 1998: International Conference on Medical Physics and Annual Conference on Medical Physics of the Association of Medical Physics of India. New Delhi, India. (Dr. M. M. Rehani, Medical Physics Unit, I.R. Cancer Hospital, AIMS, New Delhi - 110 029, India. [Tel: 91-11-659-4448, Fax: 91-11-652-3661, E-mail: mrehani@del2.vsnl.net.in]).

25-30 July 2000: World Congress on Medical Physics and Biomedical Engineering/42nd Annual Meeting of the American Association of Physicists in Medicine. Chicago, IL. (Lisa Rose Sullivan, Projects Manager, AAPM, One Physics Ellipse, College Park, MD 20740-3846. [Tel: 301-209-3387, Fax: 301-209-0862]) and (IUPESM Secretariat, Prof. Jost Spaan, Department of Medical Physics, AMC University of Amsterdam, Meibergdreef 15, 1105 AZ Amsterdam, The Netherlands).

13-17 May 1998: 6th International Meeting on Progress in Radio-Oncology, ICRO/OGRO 6, Salzburg, Austria. (Marleen Stevens, ISRO Office, Dept. of Radiotherapy, UH Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium. [Tel: 32-16-34-76-85, Fax: 32-16-34-76-81]).

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Response to Dr. Cameron: Effective Dose and Equivalent Dose Are Unnecessary

I don't know if my good friend John Cameron intended to be provocative in his article of December 1996 but in the interests of bringing a little lively correspondence to Medical Physics World I am prepared to be provoked.

John proposes that the concepts of effective dose and equivalent dose should be eliminated because they represent "poor science". I understand and accept his reasoning but draw a different conclusion - namely that we should learn how to use these concepts correctly.

Anyone who has studied radiobiology reasonably carefully, i.e. they have gone back and read original papers, not just ICRP reports or digests thereof, will know that Relative Biological Effectiveness (the precursor of equivalent dose) is an extremely complex concept depending not only on the type of radiation but also on dose, dose rate, tissue type, time of assay and other factors. Similar detailed analysis shows that our knowledge of excess cancers induced by radiation at different sites in the body, on which most tissue weighting factors are based, is seriously incomplete. We have even less quantitative data on radiation induced mutations in man.

Therefore any attempt to assign numbers to radiation weighting factors and tissue weighting factors must recognize that there is a high degree of uncertainty attached to these numbers. In many cases effective doses quoted to one significant figure would fairly reflect our knowledge and the tendency to quote effective doses to 3 or even 4 significant figures is an example of the "poor science" to which John refers.

Nevertheless, the public becomes ever more concerned about the risks from ionizing radiation and demands to know the relative risks from a chest X-ray and a CT scan of the abdomen, from a radionuclide bone scan and a year's exposure to radon.

As scientists we have to meet these demands as best we can. By all means let us explore more fully the suggestion, which has been around for a number of years, that collective imparted energy would be the best indicator of risk. What is more important for the moment is that we should recognize the very big uncertainties associated with the current methods adopted to estimate risk.

There is no such thing as a poor science - only poor scientists.

Philip Dendy, Ph.D.
Department of Medical Physics
Addenbrookes NHS Trust
Cambridge CV22QQ England

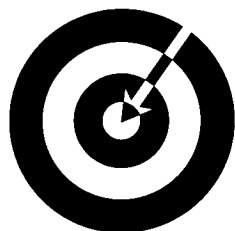
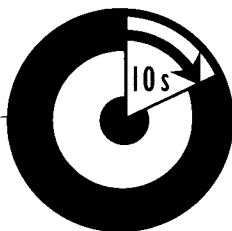
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Medical Physics in Algeria

The Algerian Association of Medical Physicists, (AAMP) was founded in 1994 and has over 40 members worldwide. The majority of AAMP members practice in Algeria. As in many developing countries, radiation protection procedures in Algeria are not heavily regulated as in developed countries and radiotherapy and nuclear medicine facilities are less computerized. The major and most serious problem facing the AAMP is the inexistence of a professional status for medical physicists in Algeria.

In a survey made by the European Federation of Organization of Medical Physics (EFOMP) in Europe, Algeria presents the lowest number of physicists per million of the population, while Sweden presents the highest one.

There are 6 Cobalt units, 3 linear accelerators, 8 CT scanners and 7 scintillation cameras in Alergia. Radiology facilities are limited: one MRI scanner serves the entire country. Private facilities are limited and are prohibitively expensive for the average person. Radiation therapy/nuclear medicine is concentrated in Algiers. No radiotherapy or nuclear medicine facilities currently exist in the South.

Approximately 90% of nuclear medicine facilities have no physics support. Although textbooks and journals kindly provided by AAPM through IOMP are available, their use is limited to medical physicists working at the main Radiation Research Center (Centre de Radioprotection et de Surete). Algeria is connected to Internet through the Centre de Recherche sur l'Information Scientifique et Technique (CERIST).

Education and training are important factors for adopting, using, and supporting medical physics activities. The first graduate program in medical physics in Algeria was initiated in 1988. The program comprised general courses in physics and mathematics and more specific courses in medical physics with special emphasis on radiotherapy physics. No courses were given in diagnostic radiology, medical imaging and nuclear medicine. There are some IAEA courses and training programs that are mainly intended for young physicists and researchers. One training program still define medical physics as "radiation protection in hospitals."

Some projects in Algeria are sponsored by the IAEA. Unfortunately, the IAEA policies are such that cooperation is conceived only with governmental organizations in member countries. Therefore most of these projects are managed by unqualified individuals. An example is the project ALG/6/005: "Maintenance and Quality Control of Medical Instruments" is managed by a technician who is not knowledgeable of nuclear medicine instrumentation, while motivated researchers are left uninformed and are often isolated. Therefore many programs have been unsuccessful. The AAMP is willing to play an important role in creating awareness and proper communications with higher authorities if given the opportunities.

Finally, we are planning to organize the first International Conference on Medical Physics, which will be held in Algeria in the period 18-20 February 1998. We are looking for potential sponsors willing to support this activity. You are kindly invited to visit our WWW site and attend this conference.

Habib Zaidi, Secretary-General of the AAMP
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<http://dmnu-pet5.hcuge.ch//Habib/aamp.html>

(Continued from page 18)

the students also have a possibility to hear some themes from medical physics which are involved in subjects of the 4th year of study. At the end of study they get the title "Diplom Engineer in Physics." In post-graduate education study at the same faculty there is a two-year scientific direction named Medical Physics which results in a "master of science" degree (MSc) (after defending the theme).

In practice, many of today's medical physicists reached their "doctor of science" degree (Ph.D.) after they finished their MSc in nuclear physics and dosimetry. The reason is that Medical Physics is a relatively new direction and the main core of the present radiation physicists population has already been working for several years. Unfortunately, we observed significant difficulties in the internal status and recognition of physicists (and clinical engineers too) in the hospital institutions, clinics and institutes. Namely, although our experts may have MSc and Ph.D. scientific levels, can be members of the international associations and are participating in many teams of advanced medical practice enjoying the obligations and activities of the same level of responsibilities as doctors in the medical work, they are treated in today's health regulations law as "non-medical" professions. The reason arises from the non-existence of the form of **organized specialization**, during the study of postgraduate medical physics at FNMS, (which would include on-the-job training, for example in oncology and radiotherapy, radiology or nuclear medicine, as for medical doctors). The final consequence reflects in the inequality in position and (material) status (compared to medical staff).

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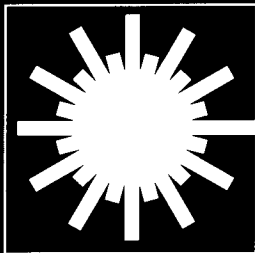
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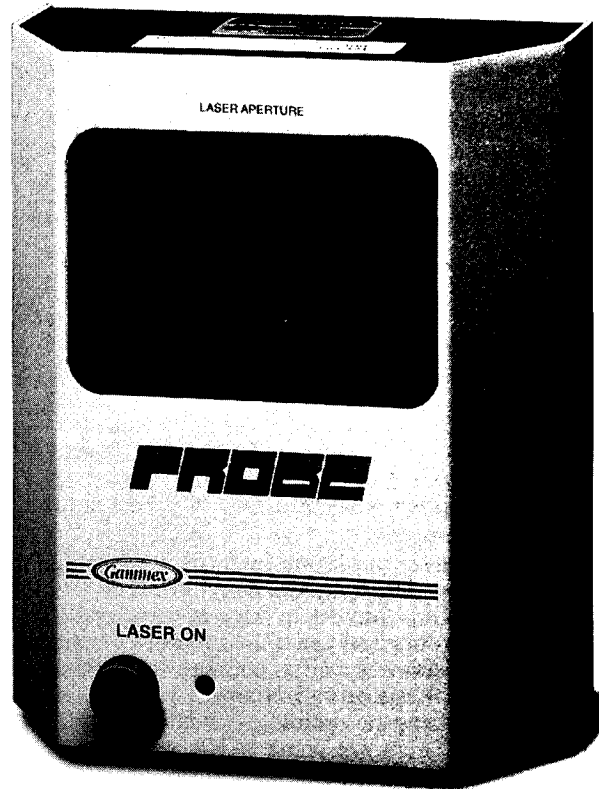
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