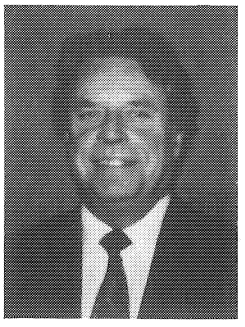
Volume 11, Number 2 1995

MEDICAL PHYSICS WORLD

Bulletin of the International Organization for Medical Physics

President's Message



Dear Fellow Member of IOMP,

Is it really only a year since the General Assembly in Rio? I confess that it seems like an eternity to me. The task of being your President, an honour I continue to treasure, coupled with managing a major department in the UK's (apparently everchanging) Health Service is proving even more arduous than expected — or I am aging even more rapidly — or both. As I said at my induction, you have made a happy man very old!

It would be a pleasure to tell you of enormous progress after one year of implementing the Action Plan and Strategic Plan. However, that is not my perception albeit that (for reasons I can never understand!) I apparently have a reputation for impatience when progress is slower than anticipated. We may be in the era of rapid international communication for coherent major companies or industries but, perhaps, never for organizations such as IOMP or even national societies for Medical Physics. Nevertheless, I wish to record my deep appreciation for the efforts and support of our Officers, Treasurer, Chairmen and other members. So what has happened in the last year?

In seeking funding resources, some 143 letters were sent to major manufacturers in our field. Although meeting with some success, the outcome so far has been frankly disappointing but was partially expected during a period of world-wide recession and tightening of belts. However, new efforts will continue to be made on behalf of IOMP. As indicated in the previous President's Message, some Governments are prepared to fund specific proposals, particularly for training and education, between Medical Physicists in their country and certain Developing Countries. This resource has been tapped in the UK. It would be valuable if members could seek vigorously to establish if similar situations exist in their own countries and advise our officers accordingly.

The Chairmen of our Developing Countries and our Education and Training Committees are now making welcome progress towards establishing rolling programs. Their success is clearly dependent on well-considered, detailed proposals from societies in our member countries but submitted as far in advance as possible of any intended date for implementation. With our limited cash reserves, IOMP can rarely provide instant support entirely from our own resources. Attracting external funding requires time (as well as considerable effort!) so that the chances of success are related directly to the time period available between the dates of submission and implementation of a proposal. It is pleasing to report that, despite present strictures, IOMP has provided support for training courses in Turkey and India.

The majority of Regional Chairmen are reacting very positively, helpfully and encouragingly. Difficulties presumably being experienced by the others will hopefully be overcome in the near future to facilitate progress genuinely world-wide. There appears to be a real difficulty in obtaining information

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Vice-President's Report

Let me first draw your attention to a very significant item in the report of your President just in case you did not recognize it's importance. This is the application he has submitted to the International Labour Office for recognition of "Medical Physicist" in the ILO Classification of Occupations. Such recognition can be extremely important to our colleagues in developing countries where medical physicists are often not considered to be on a par with other medical professionals and are, therefore, not eligible for many of the benefits that are accorded such professionals, such as appropriate responsibilities, status, and salary. The IOMP has often been asked to do something to advance the professional status of medical physicists, and this application represents an important first step in this direction. This represented considerable expenditure of time and effort by Professor Boddy, and I commend him for his hard work on our behalf.

In my MPW Vol. 10, No. 2 report, I provided information on funding resources for medical physicists to study or train abroad, with a list of institutions willing to host visiting scholars. At my institution we have already received a dozen requests to support the training of visiting medical physicists from all over the World, and one visitor (Mr. Nasukha from Indonesia) has already completed a two-month visit on an IAEA Fellowship. We are also helping several others to obtain support for similar visits. I hope others have been receiving similar requests. If you have, please let us know so that we can better judge the success of this program.

One more institution has notified us of their willingness to host visiting scholars either in radiation therapy or nuclear imaging physics. This is:

Rush-Presbyterian-St. Luke's Medical Center
James C. Chu, Ph.D., Professor and Chairman
Department of Medical Physics
1653 West Congress Parkway, Chicago, IL 60612-3833, USA
Tel: 312-942-5751; Fax: 312-942-2339

Finally, let me congratulate the Society of Biomedical Engineering and Medical Physics of ESTONIA, and the Medical Physics Society of CUBA, on their election to membership, subject to ratification by the Council at their next meeting. Welcome to the IOMP!

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

Medical Physicist Awarded Nobel Peace Prize

Medical physicist, Professor Joseph Rotblat, has been awarded the 1995 Nobel Peace Prize for the major role he played in adverting a nuclear holocaust over the past 40 years by his activities and leadership in the Pugwash Committee. This Committee was established in the mid-1950's in order to bring together nuclear scientists from around the globe to try to influence world leaders to oppose nuclear warfare and the development of nuclear weapons. The Committee first met in the town of Pugwash, in Canada (hence its name). In the early years, Prof. Rotblat was its Secretary-General, but more recently he has been the Chairman. Without question this Committee has been the one organization of scientists most responsible for preventing nuclear war in the past several decades. We all owe a great debt of gratitude to Professor Rotblat for his leadership of this movement, and this Nobel Peace Prize is a worthy award for his years of dedication and effort.

Professor Rotblat was always a prominent leader in the medical physics profession. In the late 1950's he founded one of the first medical physics graduate programs in the U.K. This was at the St. Bartholomew's Hospital Medical College in London, where he was affectionately known as "Prof." I know this because I, along with our President, Professor Boddy, were among his first students. This is not Prof. Rotblat's only connection with the IOMP, however, since he participated in all the early discussions (in 1959 and 1961) which ultimately led to the formation of the IOMP in 1963. At that time he was the Editor of Physics in Medicine and Biology, which subsequently became the first Official Journal of the IOMP. He was thus our First Editor, a post which he held until 1972.

Prof. Rotblat has been the recipient of numerous awards and honors for his teaching and research in medical physics, and his timeless efforts to reduce the risks of nuclear warfare. This Nobel Prize, the most prestigious of all awards, is his reward for such an illustrious career.

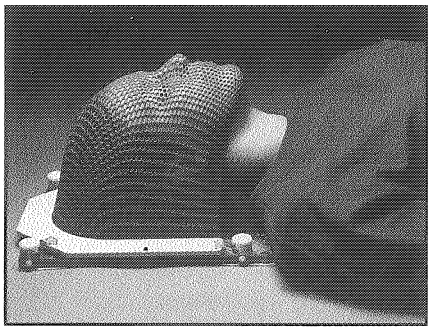
Congratulations Prof.! We are all proud of you on this momentous occasion and, as fellow medical physicists, are inspired by your success.

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

Officers of the IOMP/Council

IOMP correspondence should be addressed to Dr. Keith Boddy and Dr. Hans Svensson. Advertising Information should be addressed to Dr. Ali Meigooni. Events Information should be Addressed to Dr. Geoffrey Ibbott. Medical Physics World correspondence should be addressed to Dr. Azam Niroomand-Rad and Rodica Alecu, M.S.

radiation therapy accessories



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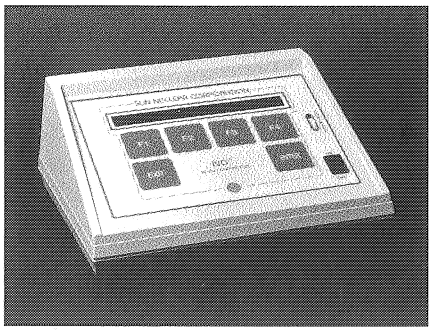

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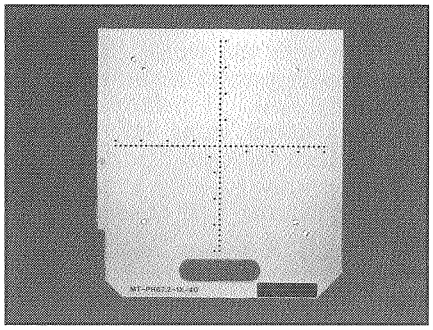

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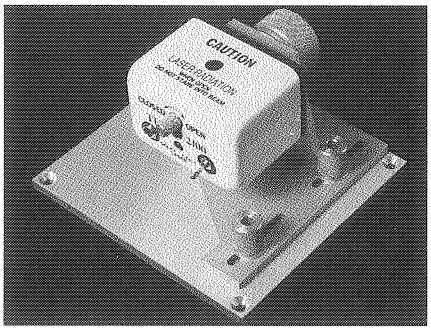

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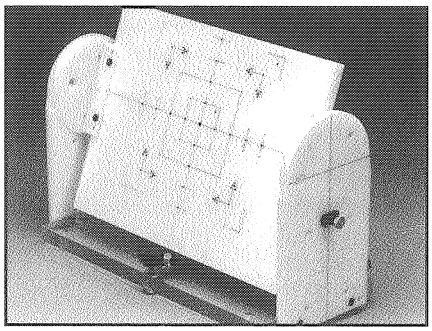

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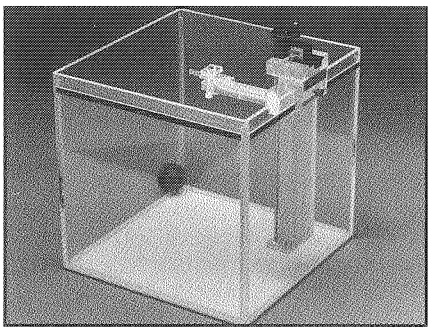

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(Continued from page 1)

from societies in our member countries (and, hence, Regions) on what their needs are or what they can offer. As recently as 1 month ago, this Message could have almost begun with the words "Is anybody out there?" Although some responses are now trickling in, the process is frustratingly slow. Hopefully to catalyse progress, I wrote an individual letter (as your President) to the President of each national Medical Physics organization. However, a response (or even an acknowledgement) is still awaited in the vast majority of cases. "Help!"

As promised, a major submission with substantial supporting documentation (and with the approval of our Officers) has now been made to the International Labour Office in Geneva. Its purpose, as you will recall, is to seek the inclusion of "Medical Physicist" in the International Standard Classification of Occupations produced by the ILO. The submission has not been rejected out-of-hand. It will no doubt take some tome to consider and, even if accepted, will need to await the next publication of either the Classification itself or of an updated Supplement. "They also serve who only stand and wait."

As your President, I participated in the 10th Congress of the Polish Society of Medical Physics with funding provided externally and generous local hospitality, largely arranged by the admirable and entrepreneurial Oskar Chomicki. Our colleagues in Poland, particularly Professor Wasilewska-Radwanska, are to be congratulated on the excellent organization. Unfortunately, I was unable to represent IOMP at the Roentgen Centenary Conference in Wurzburg as intended because, 12 hours before my departure, I learned of the unexpected, unconnected and almost simultaneous hospitalization of my mother in the north of Scotland and my son in the west of England. Perforce, they took priority.

The next step will be to review the Action Plan for the coming year in collaboration with our Officers, with the aims of reporting more substantial progress twelve months hence. However, we can achieve little without your positive support and assistance. IOMP belongs to all of us, please help to make it an ever more productive and valuable organization, especially for our colleagues in Developing Countries for the benefit of patients and the disabled world-wide.

Keith Boddy, D.Sc.
President

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REQUEST FOR SUPPORT

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THE PHYSICS OF RADIATION THERAPY
Rabat, Morocco — September, 1996

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For more information contact:

Azam Niroomand-Rad, Ph.D.
Georgetown Univ. Medical Center
Department of Radiation Medicine
L.L. Bles Building
3800 Reservoir Road, N.W.
Washington, D.C. 20007 USA
Phone: 202-784-3320
Fax: 202-784-3323

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2) Gamma camera system for nuclear medicine gamma camera studies complete small-field-of-view system especially suitable for thyroid studies with integrated computer system, including detector, gantry, collimators, computer hardware and software type ELSCINT APEX 209M.

Both systems were serviced regularly by technicians of the respective companies and are in good working order. The computer system was purchased in 1983 and withdrawn from routine duty in 1993, the gamma camera system still is in routine use and is 10 years of age and could be available in spring 1996.

For further details contact:

Developing Countries Committee
M.S S. Murthy, Ph.D., Chairman
Head, Dosimetry and Training Section,
Radiological Physics Division
Bhabha Atomic Research Center
Bombay 400084, INDIA
Fax: 91-22-556-0750

Secretary-General's Report

New Members

The "Cuban Society of Medical Physics" and the Medical Physics Section of the "Lithuanian Society for Radiotherapy" have applied to be members of the IOMP. The Officers of the IOMP have with great pleasure approved the applications. The applications will be presented to the IOMP Council during the Nice Meeting in 1997 for ratificaton.

In Cuba medical physics has old traditions and research with radioactive material for use in medicine started as early as 1910. There are today some 85 physicists and engineers working in medical physics, 59 of them members of the Cuban Society of Medical Physics. Several training courses and other meetings have already been held in medical physics. Together with Dr. C. Borras, PAHO, I had the privilege to sponsor (as an officer of IAEA) a Cuban training course on Quality Control in Radiotherapy a few years ago. We were much impressed by the enthusiasm and knowledge shown by many of our Cuban colleagues.

The Lithuanian Society for Radiation Therapy is a small organization with only 16 members. Inside this society there is a section/committee for medical physics. This is a small but active group (5 members).

Nice Meeting, 14-19 September 1997

The organizing committee is almost ready with its second announcement. The committee has recently adapted instructions to societies wishing to "organize events in association with the congress."

The European Society for Therapeutic Radiology and Oncology (ESTRO) has recently (8-11 October) had their 3rd Biennial Meeting on Physics in Clinical Radiotherapy. This meeting attracted 340 physicists and included also a large exhibition. Next meeting would be in 1997. Obviously, this would conflict with the Nice Meeting which would be a disadvantage for both organizations.

During the ESTRO Meeting P. Aletti and J. C. Rosenwald (co-president, and co-chairman of the scientific committee for Nice) made an agreement with ESTRO physics group that this group could organize their meeting inside and in cooperation with IOMP. Thus the 4th ESTRO Biennial Meeting on Physics will take place during the Nice Meeting. In addition the ESTRO physics group may organize a 2-day workshop before the Nice congress. It seems that this could strengthen the radiotherapy sections during the IOMP Meeting.

Adhering National Organization Questionnaires

This questionnaire was sent out in the Spring of 1995 and a reminder in September 1995. There are still national societies that have not answered. Please provide me with the information.

Hans Svensson, Ph.D.
Secretary-General

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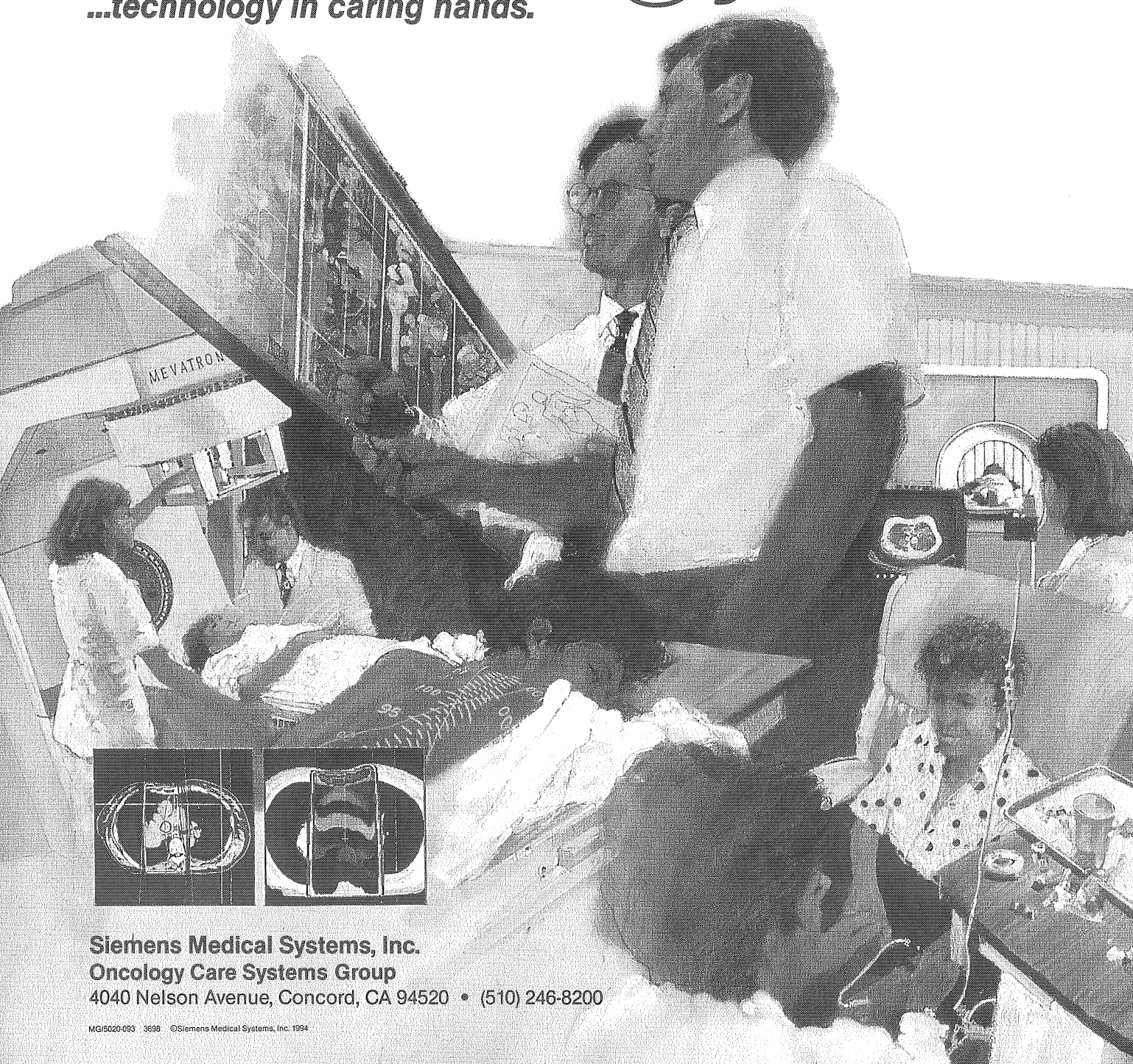

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Honorary Treasurer's Report

It is disappointing to note that as of 31st September 1995 only 36 countries have renewed their membership from a total membership of 55. Please note that renewal of subscriptions are due on 1st January each year. Reminders have recently been sent to those countries which are still to renew their membership, namely:

Brazil, Bulgaria, Colombia, Finland, Ghana, Iran, Korea, Malaysia, Mexico, Nigeria, Pakistan, Philippines, Poland, Rumania, Russia, Spain, Sudan, Turkey, United Kingdom

It would be appreciated, that if your country appears on this list, that you remind your Treasurer to take immediate action.

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This represents 23% of those who had corporate membership in 1994, and the last three are new members. I should like to take this opportunity of saying thank you to all the Corporate members for their continued support on behalf of the developing countries who benefit most from their assistance. Renewal reminders have also been sent out recently.

The summary of the accounts below show that *Medical Physics World* has returned a profit of $11,870 and that IOMP funds, after paying for Training Course, Journals and other administration charges, stands at $47,480. This should increase to $63,470 if all membership renewals are secured.

Summary of IOMP Accounts as of 31st September 1995 (US$ or equivalent)

Item	Balance	Comments
UK Account	$ 6,590	of which $4,731.70 is held on Deposit Account
USA Account	$40,890	of which $20,000 is held on Deposit Account
Total	**$47,480**	
Expected Income		
Corporate Members	($11,550)	
Country Members	($ 4,440)	
Expected Total	**($63,470)**	

Summary of major contributors or expenditures during the year 1st January - 31st September 1995

Item	Income	Expense	Comments
Medical Physics World	$11,870	$1,500	+$1,500 repaid to cover MPW start up
Journals		$1,116	Assistance with libraries in Developing Countries Programme
Training Courses		$5,900	Training courses for the following countries: India, Turkey, Moldova and Cuba
Corporate Members	$ 4,850		
Country Members	$10,171		

TWINNING

It is hoped that the article on TWINNING appearing elsewhere in this magazine will encourage more interest from the developed countries.

Ann Dixon-Brown
Honorary Treasurer

Twinning:
Developing with the Developed

1. Introduction

Following the 1994 World Congress on Medical Physics and Biomedical Engineering in Rio de Janeiro in August 1994, I promised to initiate an IOMP Twinning Programme and in the first instance to act as a clearing house; putting departments in touch with one another, both interested in seeking help and those willing to provide it.

In the UK many of our cities and towns have developed these associations with similar cities and towns in Europe, mainly in France, and they are now very familiar with the advantages that "Twinning" brings. It has enabled them to exchange ideas on common problems concerned with crime, drugs, traffic, education, town and country planning, the environment, etc. Whilst it was developed to aid in the solution of problems, it has also helped to develop trade and widen local trading markets, especially for small companies and local produce, and it has greatly helped to improve tourism and joint venture capital programming.

There ought to be many similar but different advantages for a Medical Physics Department in a Developing Country to have close associations with a department in a Developed Country and vice versa and some of these are briefly outlined:

2. Aims and Objects

The exchange of both professional and scientific information to assist with raising the profile of Medical Physicists and the Physical Sciences, not only in local hospitals and communities, but where necessary with Governments and other Statutory Authorities where experts in the Physical Sciences are not currently recognized, and also to:

2.1 Assist with Education and Training with regard to radiation safety, radiation dosimetry, imaging techniques, and any other topics as required.

2.2 Assistance with securing funding to help with the training, education, development and research programmes either from international organizations, e.g. IAEA, WHO or local funds.

2.3 Provide and/or facilitate an exchange scheme for physicists; the developing countries to visit twinned departments to learn new techniques and the developed to teach and train. This would reduce costs to the individual centres and broaden the experiences of both.

2.4 Provide support for 2.3 by assisting with domestic arrangements, i.e. living with a family would significantly reduce accommodation expenses.

2.5 Assist with specific scientific problems, i.e. special radiotherapy treatment regimes, computer programmes, dosimetry intercomparisons, Monte Carlo techniques, etc.

2.6 Exchange information, or provide suitable reference material, computer searches which could perhaps be transmitted quickly by facsimile.

2.7 Assist with the provision or production of test objects or equipment or pass working equipment, books, journals, teaching aids, etc. which may have become redundant in the developed country but still have a useful life.

The Medical Physics departments in developing countries that have so far expressed an interest in twinning are Algeria, Tanzania and 4 regions in India but to date, I have received no interest from Medical Physics Depts. in developed countries.

Please write or fax me at +44 1865 225443 if you are interested in participating in the programme and you will be sent a questionnaire to complete which will enable like centres to be put in touch with one another or to strengthen loose ties that already exist.

Ann Dixon-Brown
Honorary Treasurer

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- Information exchange between medical physicists worldwide, including all IOMP member nations.
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- Distributed to all medical physicists in the 56 IOMP member nations plus over 14 other non-member countries.
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News items, calendor events and advertising inquiries should be directed to Azam Niroomand-Rad, Ph.D. at the address below.

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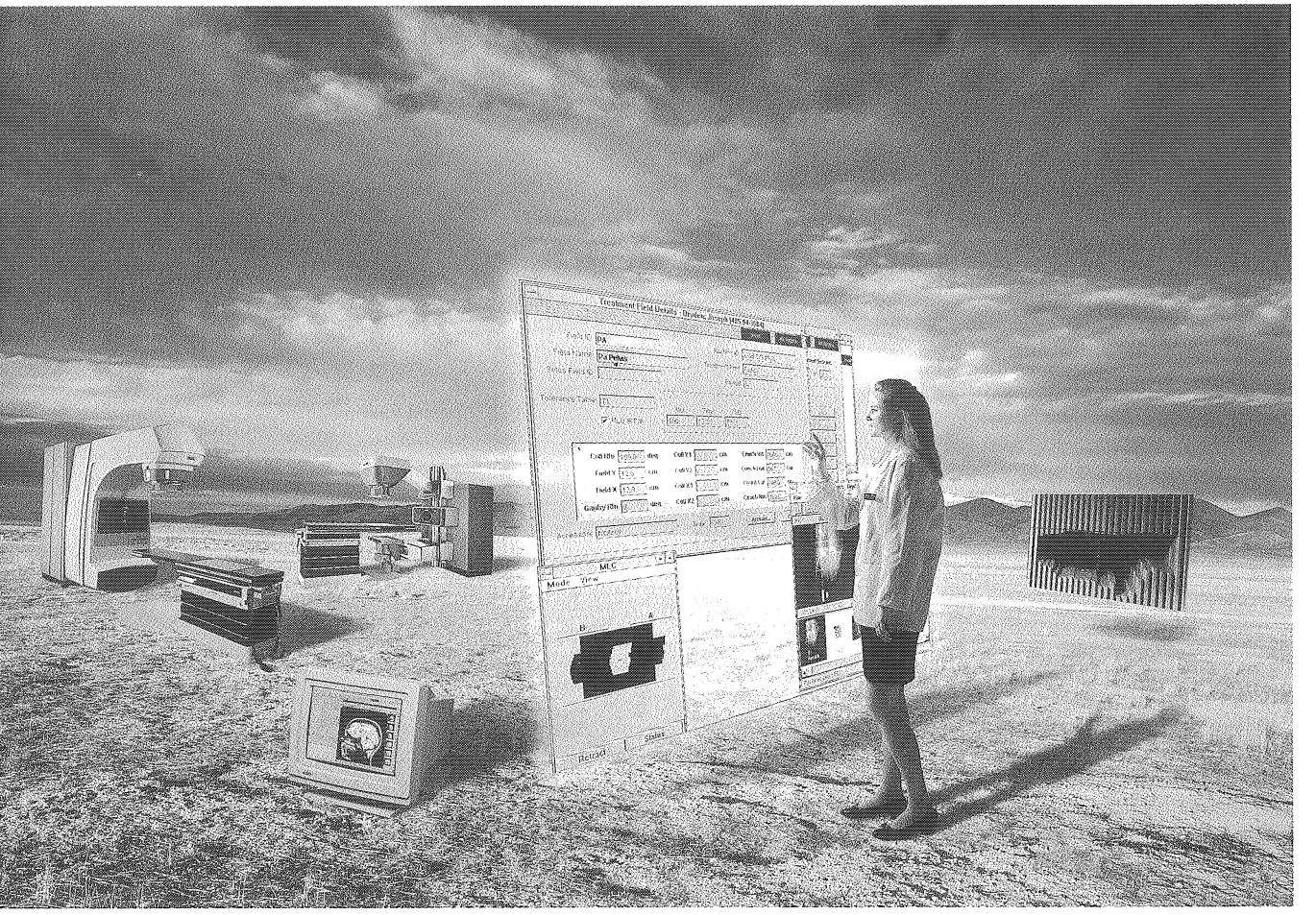

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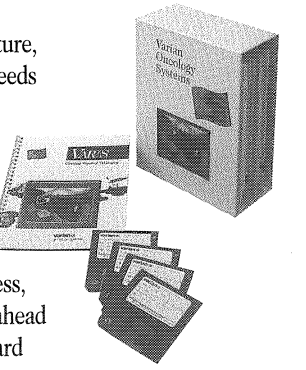

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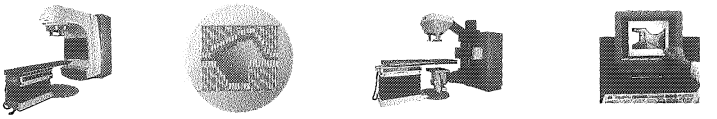

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Test Tools For Developing Countries

Simple QC Test Tools To Evaluate: Accuracy of Exposure Timer, Film-Screen Contact and Focal Spot Size

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Part 4 of the series "Test Tools For Developing Countries"

This is the last in this series of articles on simple diagnostic x-ray QC devices for developing countries. It describes test tools to check accuracy of the x-ray timer, the film-screen contact and the size of the focal spot. These tools were designed and improved over a ten year period by various physicists at the University of Wiscvonsin and in developing countries. However, in the last two years further improvements were made in the designs and rigorous clinical testing has been done by the second author. Even though these tools will often be used by radiographers with minimal training, the measurements should be reviewed by a medical physicist or biomedical engineer.

A problem not discussed in the earlier articles is that an occasional radiologist will believe that QC measurements are not necessary since any problems can be seen on the films. This is true of gross errors but many quality control problems are more subtle. They cannot be seen by the radiologist on the film. Physical measurements are necessary to quantify the problem. The purpose of QC is to catch and correct the problems before they can be seen on a clinical film.

Although the tools were originally designed for use in developing countries, improvements in the design and testing during the last two years have demonstrated that they work adequately for technically advanced countries. The design criteria for the test tools were:

1. Sufficient accuracy for routine clinical use.
2. Simplicity of design and operation.
3. Supplies should be available locally or easily obtainable from an advanced country.

This latter aspect is still seeking a long term solution.

CHECKING THE ACCURACY OF THE X-RAY TIMER

The accuracy and the consistency of the x-ray timer is important to produce consistent, good quality x-ray images. The timer test tool is a modification of an old technique called a "spinning top" — a rotating metal disc with a hole on its periphery which allowed the x-ray beam to pass through and produce a series of dots on the x-ray film beneath it. For a single phase unit, you only needed to count the dots to determine the exposure time. With full wave rectification and 60Hz voltage, there would be 120 pulses (or dots) per second. Thus 12 dots would indicate a tenth of a second. This method was adequate for single phase units but not suitable for three phase units where the x-ray intensity is nearly uniform with time.

Our design takes advantage of the availability of small, low cost synchronous clock motors which rotate at 1rps. There are two styles, one for 110 V. a.c., 60 Hz and the other for 220 V. a.c., 50 HZ. The timing device consists of a plastic disc 10.5 cm diameter by 2 mm thick attached to the shaft of the motor. The outer 15 mm of the disc is covered with a thin sheet of lead with a 1 mm gap allowing x-rays to pass through and expose the film in the x-ray cassette below the timer. The motor with the disc in a horizontal plane is placed over one corner of a cassette containing a piece of film. The motor is plugged in, causing the disc to rotate (there is no on-off switch). The x-ray beam is collimated to cover the rotating disc. The unused areas of the cassette are covered with lead for later timer measurements. A 0.3 s exposure was made with a three phase x-ray generator at 60 kVp and 50 mA and 80 cm FFD. Exposures at other clinically used times were made on other areas of the cassette. The unused portion of the cassette is shielded with lead sheets. Commonly used exposure times should be evaluated.

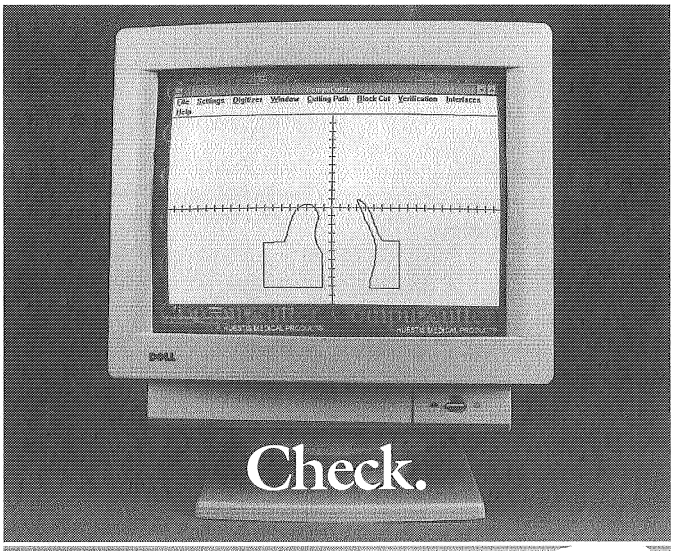
After the film is developed you should see a dark circular arc corresponding to each exposure. Using a protractor, measure the exposed angle for each timer setting. The actual exposure time is obtained by subtracting 2° (due to the width of the slit) and divide by 360° to get the actual exposure in fractions of a second. For example, if the measured angle is 92°, subtracting 2° and dividing by 360° gives an exposure of 0.25 s. The timer error should not exceed 20% and its consistency should be within 10%. The inherent accuracy of the timer is limited by the measurements of the angle. It is about 1° or less than 3 ms.

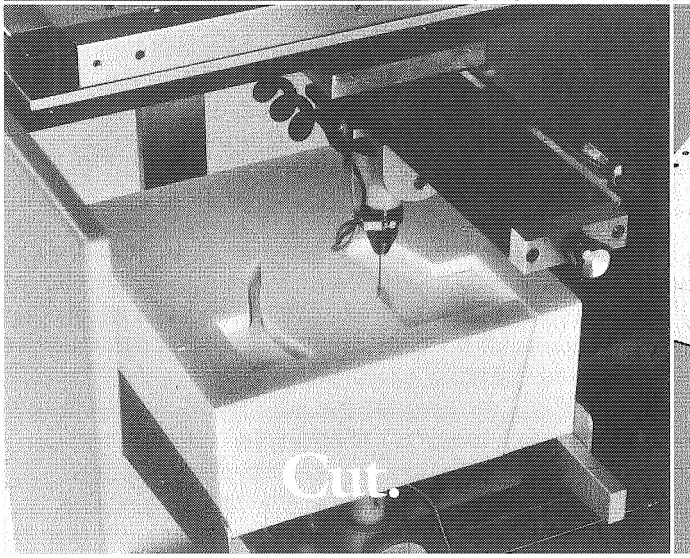
CHECKING FILM-SCREEN CONTACT IN X-RAY CASSETTES

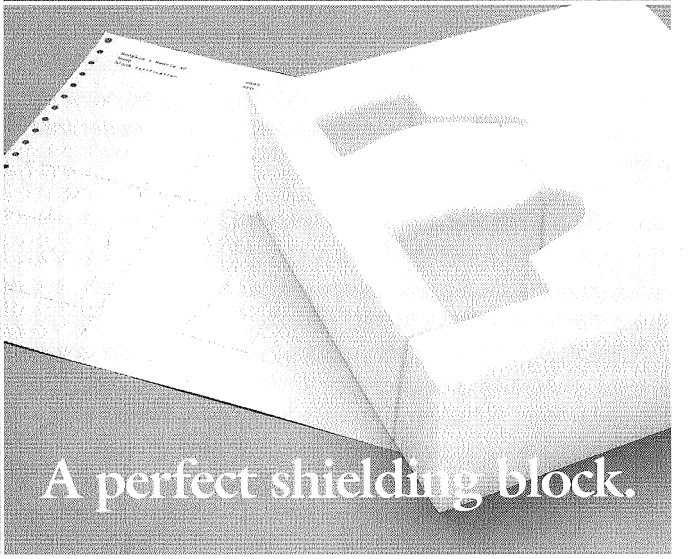
The images seen on an x-ray film were not produced by absorption of the x-ray photons in the film emulsion — unless you are looking at a dental x-ray image. In general, all medical x-ray images are produced indirectly by the light emitted from the intensifying screens when they absorb the x-rays. There is usually an intensifying screen on each side of the double emulsion x-ray film. The use of intensifying screens greatly reduces the radiation to the patient but it has a problem. To obtain the best image with intensifying screens, they must be in very close contact with the film. This contact can be evaluated using a very simple test tool placed over the cassette loaded with a fresh piece of film.

The test tool is an adaptation of the old technique of imaging a simple wire mesh. The improved test tool is a sheet perforated brass 30 cm x 40 cm x 0.8 mm thick. The perforations are 2mm diameter. Much of the x-ray beam is absorbed by the brass sheet. The film should show a geometrical pattern of small dark spots under the holes in the test tool. However, if there is poor contact between the film and intensifying screen, light can scatter into the shielded areas between the holes. The darkening produced by this scattered light is easier to see if the image is viewed from several meters. Our tests were performed at 50 kVp, 50 mA and 0.083 s at 81 cm FFD. The cassette contained Kodak X-Omatic regular intensifying screens and XRP film. The exposure time will need to be adjusted for the

(Continued on page 12)







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(Continued from page 10)

speeds of the screens and the film in order to produce an optical density of about 3.0 under the open hole. Since it is difficult to measure the optical density in the small spots, a larger opening 1 cm diameter is made near a corner in the test tool, so the density can be easily measured with an optical densitomater.

Large cassettes, such as those used for chest images, are most apt to suffer from poor contact. They should be checked about every six months. If a cassette has been dropped it should be checked before being used again. Intensifying screens usually have a number on one edge which can be read on the image. This is useful for identifying which cassette was tested.

In addition to checking for poor contact, the test image will also detect defects in the intensifying screens, such as reduced light output in some areas. New cassettes and intensifying screens should be checked before being put into service. Occasionally poor quality intensifying screens are sold to a developing country under the assumption that they will not be evaluated.

CHECKING THE SIZE OF THE FOCAL SPOT

The size of the focal spot has a significant effect on the smallest resolvable object in the image. In general, the smaller the focal spot, the better is the image of a micro-calcification or a small artery in an angiogram. The focal spot size generally changes slowly with time unless the anode has been damaged by overheating. Checking the focal spot of a new tube is essential to make sure you received what was paid for. It is a good habit to check the focal spot size about once a year. The size cannot be measured exactly since it is rarely a simple circle or square. An image of the shape can be made using a pin-hole technique. This is not necessary and it is not easy to do. The heavy metal pin-hole test tool is expensive. Another common method used by physicists and engineers is to image a "star pattern." The interpretation of the star image is not easy.

The focal spot test pattern built into the multi purpose phantom (MPP) is more than adequate for evaluating the size of the focal spot. The principle of this focal spot test tool is easily understood without any knowledge of advanced physics. The test pattern consists of 11 groups of rectangular openings in a thin metal sheet about 2 cm x 3 cm. Each group of six rectangles have three perpendicular to the other three. The size of each rectangle in a group of six are the same but the 11 groups have sizes that get gradually smaller. These focal spot patterns are not readily available and they must be made in quantities of 100. The authors hope that the University of Wisconsin or a private company may be able to provide these as needed.

The focal spot test depends on determining which in the group with the smallest rectangles in which all six rectangles can be clearly distinguished in the image. The group that meets this criterion depends on the magnification. The magnification need not be known. There are two small holes in the focal spot target 20.0 mm apart. The separation of the images of these two holes can be easily measured. It is not necessary to calculate the magnification. There are tables for each separation of the two dots from 25 to 40 mm that give the size of the focal spot for a given group of six rectangles resolved.

To measure the focal spot size using the focal spot pattern, it is necessary to use x-ray film without intensifying screens, which would blur the image. If a "cardboard cassette" or "ready-pack" film is not available, it is possible to wrap a sheet of ordinary x-ray film in a light-proof paper or plastic. This film is placed on the table top and the plastic bucket of the MPP is inverted over it to support the focal spot test pattern about 22 cm above the film. The x-ray tube should be placed about 45 to 70 cm above the table top. This will give a magnification of about 1.5 to 2.0 — the actual distance is not critical. Placing it closer (greater magnification) permits measurement of a smaller focal spot. The light localizer should be used to position the x-ray beam over the pattern and to collimate a bit larger than the pattern.

An exposure should be made of each focal spot. It is often not necessary to mark them as the smaller focal spot will give a sharper image because of its better resolution. After the film is developed, check to see if the images are sufficiently dense to be easy to "read." If not, make an appropriate adjustment in the mAs and repeat the exposures. Measure the distance between the two dots to the nearest mm. Typical distances are 25 to 40 mm. Then scrutinize the image. Looking at the largest pattern (no. 1) and continuing until you reach the smallest pattern for which all six rectangles can be seen. Look in the table corresponding to the separation of the dots (e.g. 28 mm) and adjacent to the smallest pattern where all six can be seen (e.g. #4) you will find 3.8 mm, the appropriate largest dimension of the focal spot. If this is the large focal spot and the manufacturer sold it as a 2mm focal spot, it would still be considered satisfactory according to NEMA standards (see below).

For our evaluation we used 50 kVp, 50 mA and 1.5 s. The nominal 0.6 mm small focal spot measured 1.1 mm and the nominal 1.2 mm large focal spot measured 1.8 mm. Both focal spots were considered satisfactory according to the U.S. National Electrical Manufacturer's Associations (NEMA) standards.

The images should be clearly marked with the identification of the x-ray room, the tube and the date measured. The film should be retained for comparison measurements made in about a year.

We thank Radiation Measurements, Inc. of Middleton, Wisconsin for donating some of the components for the various test tools. We also thank the earlier contributors who participated in the development of these QC test tools.

Report From AAPM International Scientific Program

The fourth* AAPM Scientific Exchange Course/Workshop in Radiation Therapy Physics was held successfully in Istanbul, Turkey during September 11-15, 1995. 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 Turkey.

This Course/Workshop was offered in collaboration with the Turkish Association of Medical Physics, TAMP at the Oncology Institute, University of Istanbul, Turkey. Dr. Kuter, President of TAMP, the Host Director and Dr. Saiyid Shah, Consultant for Turkey, organized this Course/Workshop. AAPM faculty members were: Drs. Leroy Humphries, Faiz Khan, Bhudatt Paliwal, James Purdy, Saiyid Shah, and Theodore Thorson. About 80 medical physicists and radiation oncologists attended this Course/Workshop.

The Course/Workshop also contained chamber intercomparison, chamber calibration and a workshop in acceptance testing procedures for linear accelerators. A total of 12 of Khan's books, with author's discount, were also donated to 12 major radiation therapy centers in Turkey. Certificates of Participation were presented to the attendees and Certificates of Appreciation were presented to the faculty members. The certificates were signed by Drs. Simmons, AAPM President, Azam Niroomand-Rad, AAPM ISEP Chair, Hans Svensson, IOMP Secretary-General, and Kuter, Host Director.

The local expenses were supported by TAMP, IOMP, local officials, Trade Organization, and Host Institution. The travel expenses of the faculty were financed by funds provided by AAPM and vendors. Corporate Sponsors (+$1,000) were CNMC Company, Varian Associates, and Siemens Medical Systems, Inc. Contributors ($100-499) were Radiation Oncology, P.S.C. (Dr. Tristan M. Briones), Advanced Radiation Measurements Inc., Mick Radio Nuclear Instruments, Inc., Huestic Machine Corp., and Best Industries, Inc. Donors (<$100) were Argus Software and Standard Imaging. We are grateful to these companies for their generous contributions. We also wish to acknowledge Dr. Kuter's commitment and effort in the past few years in organizing and implementing this Course/Workshop in Turkey as well as the effort of the local organizing committee. We also like to thank the AAPM faculty members for their time and effort in this endeavor.

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

*Pakistan (1992), Poland (1993), Iran (1994)

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Calendar of Events

9-12, January 1996: 22nd Symposium on Radioisotopes in Clinical Medicine and Research, Badgastein, Austria, (Department of Nuclear Medicine, University of Vienna, Waehringer Guertel 18-20, A-1090 Vienna, Austria).

9-12, April 1996: 7th International Congress on Hyperthermic Oncology, International Association for Hyperthermic Oncology, Rome, Italy, (Prof. C. Franconi, Chairman, VII I.C.H.O. Internal Medicine Dept., Tor Vergata University of Rome, Via O. Raimondo, 00173 ROME, Italy, [Tel: + 39-6-72 35 170, Fax: + 39-6-72 59 2821]).

14-19, April 1996: 9th World Congress of the International Radiation Protection Association (IRPA), Hofburg Congress Center, Vienna, Austria, IRPA9 Congress Org. Ct. Austropa Interconvention, P.O. Box 30, A-1043, Vienna, Austria, [Tel: 43-1-58800113, Fax : 43-1-5867127]).

24-26, April 1996: An International Particle Therapy Meeting, The Detroit Medical Center and the Wayne State University Radiation Oncology Center, The Atheneum Hotel, Detroit, (Dr. Richard L. Maughan, Gershenson Radiation Oncology Center, Harper Hospital, 3990 John R., Detroit, MI 48201 USA [Tel: 313-745-2487, Fax: 313-745-2314, E-mail: maughan@rocdoc.roc.wayne.edu]).

13-15, May 1996: Annual Brachytherapy Meeting, GEC-ESTRO-American Brachytherapy Society, Congress Centre "Vinci" Tours, France, (ESTRO Office, University Hospital, Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium [Tel: 32-16-347680, Fax: 32-16-347681]).

14-19, September 1997: World Congress on Medical Physics and Biomedical Engineering, Nice, France (NICE '97, SEE, 48, rue de la Procession, F-75724 Paris Cedex 15, France, [Tel: 33-1-44496060, Fax: 33-1-44496044]).

Proforma For Status of Medical Physicists

At the Brazil Congress of Medical Physics and Biomedical Engineering Dr. Carri Borras, Chairperson, Long Range Programme Committee, IOMP presented a report on the status of medical physicists in developing countries. Dr. Keith Boddy, President, IOMP has assigned to the Developing Countries Committee the responsibility of identifying the status of medical physicists and any associated problem in these countries. In order to fulfill this obligation it is necessary to obtain input from medical physicists from developing countries. With this in view, the accompanying proforma has been developed. It is requested that medical physicists from developing countries may take a few minutes to fill in the proforma and return it to the address shown. Any futher suggestions to help evaluate the status of medical physicists will be very much welcome.

PROFORMA

1) Name of Medical Physicist: _____

_____

2) Address for correspondence: _____

_____

3) Name and address of the competent authority responsible for regulating medical application of radiation in your country.

_____

_____

4) Is there a regulatory requirement for the appointment of Medical Physicists in radiation therapy/radiodiagnosis/nuclear medicine centers in your country. ☐ YES ☐ NO

5) If yes, please briefly state the requirement:

_____

_____

_____

6) Is Medical Physics recognized as an independent discipline by the national medical education authority. ☐ YES ☐ NO

7) Name and address of the national medical education authority for further correspondence in this regard:

_____

_____

_____

8) Minimum qualifications and experience required to be appointed as Medical Physicists:

_____

_____

9) Facilities for Medical Physics training:

_____

10) Opportunities for career advancement:

_____

11) Responsibilities of Medical Physicists:

_____

12) Emoluments of Medical Physicists in comparison with other medical and paramedical staff:
☐ Satisfactory ☐ Unsatisfactory

13) Any other information: _____

_____

_____

14) How do you think IOMP can help in improving the status of Medical Physicists in your country?

_____

_____

Please return to:

M.S.S. Murthy, Ph.D.
Chairman, Developing Countries Committee
Head, Radiation Dosimetry & Training Section
Bhabha Atomic Research Centre
Bombay, 400 085, INDIA
Fax: 91-22-556-0750

Library Programme For Developing Countries

The Developing Countries Committee helps developing countries to organize libraries at a few centers by donating books and periodicals of interest to medical physicists. More than 50 such libraries already exist in 36 countries. If you are interested in organizing such a library contact:

M.S.S. Murthy, Ph.D.
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An International Particle Therapy Meeting April 24-26, 1996

Current Status and Future Directions in Particle Therapy and International Meeting in conjunction with the Proton Therapy Cooperative Group Meeting XXIV, will be hosted by the Detroit Medical Center and the Wayne State University Radiation Oncology Center. The Meeting will be held at the Atheneum Hotel in Greektown area of downtown Detroit.

The meeting will include discussions of proton radiation therapy, external beam neutron therapy and ^{252}Cf neutron brachytherapy.

For further information contact:
Dr. Richard L. Maughan
Gershenson Radiation Oncology Center
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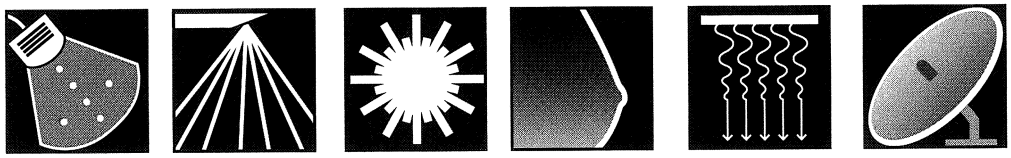

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