

Published by the European Federation  
of Organisations for Medical Physics (E.F.O.M.P.)

## Letter from the President

The tenth anniversary of our Federation was celebrated in Oxford last September, together with the Annual Meeting of our UK colleagues in IPSM/HPA.

The conference brought some 50 participants from EFOMP organisations to Keble College, where the President of IPSM, Dr. Penny Roberts, presided over a very successful conference and a wonderful conference dinner in the College dining hall, with a style that made us forget how hard the traditional wooden benches were!

Thanks to our IPSM colleagues for Medical Physics 90, and thanks to the industry for their support for HEXPA90.

The Federation Lecture was presented by Prof Dr Med F.E. Stieve from Munich, who presented his view and experiences as a radiologist on the development of medical physics in Europe. His lecture will be published in *Physics in Medicine and Biology*. Please do read it if you were unable to attend.

The conference series will be continued with Medical Physics 93, which is being organised by the Spanish Association for Medical Physics, SEFM.

At the Council Meeting in Oxford, we were pleased to welcome the Cyprus Association for Medical Physics and Bio Medical Engineering as the 25th. member organisation of EFOMP.

Also at the Council Meeting, a range of activities were presented and proposed. A programme of Summer Schools has been initiated, providing training for Qualified Experts in the context of the EC Directive on patient protection from ionising radiation. The first Summer School, on radiation protection in Nuclear Medicine will be held in Dublin in July, 1991. The local organisers in Dublin and the EC representatives associated with the programme have arranged a very attractive programme.

Council has proposed that the Federation should publish a Policy Document on the organisation of Medical Physics and the related manpower requirements. Some initial papers have already been prepared, and work is continuing.

The next Council Meeting will be held in Vienna on September 15th., 1991, immediately before the European Congress of Radiology. Medical Physicists are becoming increasingly involved in the work of imaging departments, and we hope that many physicists will present work at Vienna. We also hope that attendance at the Council Meeting will exceed even that at Oxford, which was itself a highlight in EFOMP's history.

*Pieter Inia, President*

## German Unification Changes in Medical Physics Organisations in Germany

The unification of the two parts of Germany also affected the Scientific Societies. The result of these changes in the medical physics community is that the Deutsche Gesellschaft für Medizinische Physik (DGMP), which was the West German medical physics society, now represents medical physicists throughout the united Germany.

In the East, medical physicists specialising in radiation physics belonged to the Sektion Klinische Strahlenphysik und Radiologische Technik of the Gesellschaft für Medizinische Radiologie (GMR), which was affiliated to EFOMP. Last summer, it became evident that the GMR would be disbanded in autumn 1990. The DGMP therefore offered its East German colleagues the opportunity to join DGMP at a reduced rate. About one hundred members took this opportunity. After the dissolution of GMR, the physicians and also some physicists joined the Deutsche Röntgengesellschaft. Medical physicists specialising in fields other than radiation physics belonged to the Sektion Medizinische Physik of the Gesellschaft für Mathematische und Physikalische Biologie (GMPB). The status of GMPB is unknown at present, but the Sektion Medizinische Physik disbanded, and a proportion of its members joined DGMP.

*Jurgen Richter*

## EFOMP Affiliations, 1991

There have been several changes in EFOMP membership over the past year. In addition to the changes as a consequence of German unification described above, we are pleased to welcome one new member organisation and to report on progress with two others.

The Cyprus Association for Medical Physics and Bio-Medical Engineering was founded in 1988, and decided in 1990 to apply for affiliation to EFOMP. At the meeting of the EFOMP Council in Oxford last September, their application was accepted. We are pleased to welcome our Cypriot colleagues to the Federation.

The Romanian Medical Physicists' Association (RMPA) was founded last October, and now has 65 members. At their meeting in Paris in April 1991, the Officers of EFOMP agreed to recommend to the Council that the Romanian society should be accepted as an EFOMP member at the Council meeting in Vienna in September this year.

In the Soviet Union, an Association for Medical Physics is being established within the Physical Society. Their first constituent conference is to be held in November, 1991 at Obninsk near Moscow. We hope that, in due course, they will apply for EFOMP membership.

### Medical Physics '90, A Short Report

Medical Physics '90 was organised by the Institute of Physical Sciences in Medicine in close collaboration with the European Federation of Organisations for Medical Physics.

The Conference combined the 1990 IPSM Annual Conference and the Second European Congress of Medical Physics, thereby celebrating the Tenth Anniversary of EFOMP. Incorporated in the conference was HEXPA '90, a major commercial exhibition. Two keynote addresses of special interest to all participants were given: the Hospital Physicists' Association Lecture and the EFOMP Federation Lecture.

For a participant from abroad, the venue of the conference, Oxford, allows many impressions of the educational tradition in the UK. Accommodation for most of the participants had been arranged in Keble college. The conference and exhibition were held in the Department of Zoology, University of Oxford.

The conference started on Wednesday, 12th. September with the usual business of the incorporated Societies: Officers' meetings, General meetings and Committee meetings. A first view of the exhibits was possible, because HEXPA '90 opened in the evening. More than 30 manufacturers were presenting their products, including instruments for radiation detection and dosimetry, computerised measuring systems, treatment-planning systems and, additionally, a lot of information on other equipment not displayed in the exhibition hall. The lectures were given in ten parallel sessions and two plenary sessions on Thursday and Friday. On Saturday there were some visits to local hospitals and the full-day Council Meeting of EFOMP.

The six parallel sessions on Thursday were on Nuclear Medicine, Brachytherapy, Laser Interaction with Tissues and Photodynamic Therapy, Digital Radiology, Emergency Planning and Physiological Measurement.

Nuclear Medicine covered topics on the state of the art of computing in Nuclear Medicine and application of SPECT. The Brachytherapy session dealt with planned and achieved dose distributions in I-125 seed applications, the problem of dose optimisation. Some aspects of dose specification were discussed.

The session on Digital Radiology was devoted to detector physics and some topics of image processing.

On Friday, four parallel sessions covered External Beam Therapy, Respiratory Function and Sleep Studies, Body Composition, and European, Professional and Management Matters. Also on Friday, the Oxford Scientific Session and the EFOMP Federation Lecture were held. The Federation Lecture, "Medical Physics in the Past, Today, and in the Future: The Development of Medical Physics from the Point of View of a Radiologist" was given by Prof. Dr. med. E.F. Stieve, from Munich, FRG.

Among the social events of the meeting, the Annual Dinner on Thursday at Keble College must be mentioned as a highlight.

Saturday was devoted to EFOMP activities. The annual Council Meeting, with participants from twenty countries present, was held at Keble College.

*H.K. Leetz*

# EFOMP Travel Awards

## Sponsored by CGR-MeV

### A Report by the 1990 Recipient

The EFOMP Travel Award for 1990 made it possible for me to participate in two conferences and to visit the Royal Marsden Hospital, Sutton, UK. My award started on 8th. September at the Brachytherapy Working Conference, 6th. International Selectron Users' Meeting, held in Florence, Italy. At this large conference, there were almost 500 participants with 132 lectures. Several of the lectures dealt with treatment techniques we are starting to use in my hospital. Of particular interest were breast conservation therapy with interstitial high dose rate boost and brachytherapy of advanced carcinomas of the uterine cervix.

From 11th. September, I participated in Medical Physics '90 at Oxford, UK where there were many interesting papers and posters and a large technical exhibition. At the exhibition, I saw demonstrations of several items of sophisticated equipment for radiotherapy. It was possible to visit the GE-CGR stand where there was information on a complete range of linacs, and a new treatment planning system *Target 2*. The professional session of the meeting gave me a view of some problems of British medical physics.

There was an opportunity to meet EFOMP Officers: Dr. P. Inia, Dr. H. Aget, Dr. P. Dendy, Professor J. Clifton, Professor Dr. J. Richter and Dr. E. Claridge, to be an observer at the EFOMP Council and Education Committee meetings and to make international contacts with physicists from many countries.

In the second week, I was at the Royal Marsden Hospital. Each day was dedicated to a special topic and consultant. Dr. P. Mayles explained to me their work with linacs, treatment planning and some aspects of interstitial brachytherapy. Dr. A. Nahum discussed dosimetry problems, Dr. W. Swindell megavoltage imaging, Dr. M. Rosenbloom conformation therapy and Dr. S. Webb the CT simulator and dose optimising algorithm.

Finally, I would like to express my gratitude to EFOMP Officers and GE-CGR for this Travel Award which has helped in my further professional development and given me an introduction to international contacts and the work of other institutes.

*B. Plesko, October, 1990*

### The Awards for 1991

There was keen competition for the 1991 Travel Award. The standard of applications was high, and EFOMP Officers decided to make two awards.

The first award goes to Mr. F. Kjaer-Kristoffersen of the University Hospital, Herlev, Denmark who will be visiting the University Hospital Henri Mondor at Creteil in France to learn their interstitial radiotherapy technique, and other centres in France.

The second award goes to Mrs. H. Bilge in the Medical Radiophysics Division, Institute of Oncology, University of Istanbul, Turkey. Mrs. Bilge will be spending some time in the Department of Medical Physics in Oxford, UK, and will also visit other centres in the UK.

Congratulations to the lucky recipients and thanks and condolences to the others who competed.

### Applications for 1992

Applications are invited for the 1992 EFOMP Travel Award. The award is intended to help young medical physicists to enhance their skills through contacts with colleagues in other EFOMP countries. CGR-MeV kindly sponsor the award, which has a value equivalent to £600 sterling. Potential applicants should write, in the first instance, to: Dr. P.P. Dendy, Chairman, Professional, Education and Training Committee, Department of Medical Physics, Addenbrooke's Hospital, Cambridge, CB2 2QQ, U.K.

*Dr. P.P. Dendy, Chairman, EFOMP Education Committee*

# Radiation Accident at Zaragoza

Reports have appeared in the media in a number of countries concerning an accident in a radiotherapy department in Zaragoza, Spain. A fuller report on the accident must, obviously, await the conclusion of the official inquiries at present in progress. At present, our best information comes in a report prepared for the Spanish Society for Medical Physics, SEFM, by Dr. Pedro Andreo. This is reproduced below, with the permission of SEFM. In her preface to the report, Montserrat Ribas, President of SEFM writes:

The Spanish Medical Physics Society has prepared a report about the malfunction of the Electron Linear Accelerator, Model Sagittaire, installed in 1976 in the Clinical Hospital of Zaragoza. See copy opposite.

Since the matter is *sub judice*, no more information can be given at this moment.

Also reproduced below are the brief reports on the incident published by two EFOMP member organisations: an English translation of the report of the French society, SFPH and the Notice published by IPSM in Britain. Once the official investigations are complete, it is in the interests of the whole Medical Physics community that the full facts are widely disseminated, so that the lessons they contain may be learned.

## Published by SFPH, in their Bulletin No. 60

We have learned through the press and from CGR-Mev that, following a malfunction of a SAGITTAIRE accelerator between 10th. and 20th. December last, and due to a lack of daily quality control on the equipment, several patients were irradiated excessively, leading, to date, to the deaths of three of them.

At present, an inquiry and legal action are in progress to determine the exact causes of the accident.

The French radiotherapy community, physicists and radiotherapists, are working to obtain full and accurate information on what, in fact, happened.

As soon as that information is available, we will pass it on to you.

Once again, as when M. Rosenwald reported in Bulletin No. 57 after the accident in England at a Gamma therapy installation, we must draw the attention of the managers of public and private institutions and of the clinicians with whom we work to those responsibilities which are ours and to the risks involved if we have insufficient resources in personnel and equipment to guarantee patient safety and the associated quality standards in dosimetry.

We recall that since 1969 French law requires the presence of a full-time physicist at accelerator installations, and that European directives since 1984 require a physicist to be associated with gamma therapy and nuclear medicine installations.

This implies that we should be responsible for all the verifications which are required on receipt of the equipment and after all work by the manufacturer, in addition to regular checks.

In 1986, SFPH published a document on the quality control of accelerators in medical use, recommending the frequency of checks to be made.

A French standard, C74 209, has just been published in January 1991, and restates the same recommendations.

*G. Gaboriaud, President*

## Circulated to IPSM Members, April 1991

Some of you may have read brief press reports about a radiotherapy 'accident' in Zaragoza, Spain. Information is now coming in to suggest that this may have been a rather serious incident. We do not have sufficient details at this stage to make a full statement but on the basis of the information already available wish to re-emphasise the three essential principles of good medical physics practice in Radiotherapy.

1. Do ensure that you have adequate qualified staff to do the work.
2. Do ensure that all equipment capable of generating high dose rates of ionising radiation is adequately calibrated and checked at frequent intervals.
3. Do ensure that physicists are proactive in ensuring good communications between staff groups involved in treatment delivery.

*Dr. P.P. Dendy, Chairman, Health and Safety Policy Committee*

# Report on the Accident of the Electron Therapy Linear Accelerator Sagittaire of the Radiotherapy Department of the Clinical Hospital of Zaragoza, Spain

## 1. Cause of the Accident

Initial breakdown of the accelerator, followed by an incorrect repair and a manipulation of the equipment interlock systems.

## 2. Operation of the Equipment in Normal Conditions

The accelerator started to function in 1976.

When the operator selects a determined electron energy on the control panel, the equipment "automatically" selects the phase difference of the microwaves which are injected in the acceleration section and the current intensity of the bending magnet. These values are different, specific and concrete for each energy.

The microwave phase difference determines the beam energy of the accelerated electrons. The current intensity of the bending magnet determines the bending angle of the electron beam.

## 3. Failure

The apparatus suffered a breakdown in the bending magnet power supply. With this failure, the current of the bending magnet stayed fixed for any selected energy and reached a value near the maximum.

The accelerator had this failure quite frequently and there had never been any consequence for the patients. In this case, the electron beams of low energy were correctly accelerated at the energy selected by the operator on the control panel, since the equipment correctly selected the appropriate phase. However, since the beam was bent with an incorrect current, there was no radiation output at the exit and the interlock of the equipment automatically shut down its operation, indicating the situation of "FAILURE".

## 4. Incorrect Repair

In other occasions when this malfunction occurred, the repair was done by substituting the deteriorated transistors in the power supply, achieving again the normal operation. In this case, instead of repairing the bending magnet power supply (deteriorated transistors), the microwave phase difference was modified. As a consequence, the energy of the exit beam was modified until it matched the energy corresponding to the "incorrect" bending magnet current.

This would not have occurred if:

1. The phase would not have been manipulated.
2. The automatic phase selection would not have been changed to manual selection by the technician that repaired the failure.

This manipulation could only be done inside the machine room.

## 5. Consequences

When the operator selected a determined energy, the equipment supplied a different one, since in colloquial terms, it "had been fooled" by the repair.

In addition, this "fooling" the equipment resulted in the fact that the scanning magnet current to obtain a wide beam was not the correct one for the real energy of the beam, with the consequent change in the response of the accelerator transmission ionisation chambers and, hence, of the emitted radiation dose.

## 6. Clarification

The selection of the electron beam energy is performed with luminous buttons placed on the control panel.

In the control panel there is an analogue dial of the bending magnet current. So, when the problem occurred, the energy indicated was the one selected by the operator, in spite of the fact that this indicator logically showed its maximum value.

No device on the control panel reflects a measure of the real energy of the electron beam.

Two voluntary re-enactments of the failure and of its incorrect repair, performed in the presence of General Electric technicians, the Physics Department, the Maintenance Department, the Department of Radiotherapeutic Oncology and the Hospital Management, corroborated the accuracy of this technical interpretation of the causes of the accident.

## Sharing Information on Accidents to Patients

In March this year, the EFOMP Scientific Committee launched a scheme which assists EFOMP organisations to share information about accidents to patients. The Committee is well aware that each EFOMP national organisation does everything in its power to help its members to ensure the safety of patients. However, accidents occur and can be traced to equipment and procedures which members calibrate, operate or maintain (the accidents at Exeter and Zaragoza are examples). We cannot foresee all possible accidents but when we know one has occurred we can try to prevent a repetition.

The causes of accidents do not respect national boundaries. Many countries use the same equipment and similar procedures. Therefore, information about the causes of an accident in one country can help members in another country to avoid a similar accident.

Unfortunately, there are not yet inter-governmental arrangements for exchange of medical accident information across all European national boundaries. It is possible that this may begin in the European Community, but only for equipment, not for procedures. Also, it would not cover all EFOMP countries.

It is clear that a federation of national medical physics organisations can play an important part in gathering accident reports and distributing them. EFOMP Scientific Committee is willing to do this and has requested the help of national organisations. A protocol for reporting accidents has been sent to the Chief Officer and to the EFOMP representative of each national organisation. It is summarised on Page 8.

All accident reports will be analysed for common features. For example, equipment, procedures, organisation, staff numbers and training can all contribute to an accident. A report of the findings will be presented at *Medical Physics '93* in Tenerife. National organisations will receive a written report which will also be summarised in *European Medical Physics News*.

Scientific Committee asks members of each national organisation to ensure that all relevant accidents are reported to EFOMP in accordance with arrangements made by the national organisation. The Committee recognises that accidents to patients are painful for all concerned. However, experience has shown that proper analysis of their causes can assist hospital and national authorities to appreciate the heavy responsibilities of medical physicists and the importance of well-organised and well-funded medical physics services.

*J.K. Haywood, EFOMP Accident Collator*

## News from the Professional, Education and Training Committee

In addition to the Travel Awards and the Summer Schools reported elsewhere in this issue, the PET Committee has been active in a number of other areas.

- 1 Staffing Levels** A document on minimum staffing levels for physicists in radiotherapy, nuclear medicine and diagnostic radiology has been out for consultation for several months now. Several comments have been received and incorporated. It is hoped that a final version will be ratified by Council as an EFOMP Policy Statement in September 1991.
- 2 Interpretation of *Sophisticated Department* in the European Committee Directive on the Protection of the Patient** Attempts to define a *Sophisticated Department* have been unsuccessful. Therefore, the PET Committee is now working on a somewhat longer statement suggesting an interpretation of *Sophisticated Department*. This will be considered by National Organisations in September.
- 3 Survey of Training programmes in EFOMP Countries** The report and conclusions of this survey have been discussed and after finalisation of a few details a report will be presented to the Commission of the European Communities (CEC).
- 4 Planning for a follow-up meeting with the CEC on *The Qualified Expert in Radiophysics*** The Chairman and Secretary of PET were members of a small planning group that met to draw up an agenda for this meeting. The full meeting is provisionally arranged for 13th. December 1991 and all the items mentioned above will be discussed. Representatives of member organisations will be invited to attend.
- 5 Higher Education Diplomas** A questionnaire is being sent out to member organisations to seek their views on whether the idea of a Qualified Expert in Radiophysics requires regulation and, if it does, how this might best be achieved.
- 6 Policy Statements** The Secretary is collating Policy Statements issued by Member Organisations and would appreciate receiving more responses.

*Dr. P.P. Dendy*  
*Chairman, PET Committee*

# Summer Schools for Medical Physicists Training as Qualified Experts in Radiophysics

## Nuclear Medicine, Dublin, July 1991

By the time you receive this issue of *European Medical Physics News*, we hope the first Summer School, covering subject matter in nuclear medicine and organised jointly by EFOMP and the Commission of the European Communities will already have taken place (Dublin, Eire, 1st to 7th. July, 1991). At the time of writing, plans are proceeding well and the School has been over-subscribed. We are particularly pleased that applications have come from a large number of EFOMP member organisations.

## Radiotherapy, Sevilla, June 1992

Plans are now being made for the second Summer school, covering topics in radiotherapy. Subject to satisfactory funding arrangements, this will be held in Seville, Spain from 14th to 21st June, 1992. Younger physicists who are reaching the *qualified expert* standing in radiotherapy are encouraged to attend this school and should write for further details to:

Francisco Sanchez Dublado  
Dept Fisiologica y Biofisica  
Facultad de Medicina  
Universidad de Sevilla  
Avda Sanchez Pizjuan 4  
E-41009 Sevilla (Spain)

## Advanced School on Medical Physics Como, Italy May 1992

An Advanced School on Medical Physics, jointly sponsored by EFOMP, AIFB (The Italian Association of Biomedical Physics) and the University of Milan will be held in Villa Olmo, Como, Italy from 26th. to 30th. May, 1992.

The Advanced School is intended for research workers in Medical Physics, and aims to explore in some detail the latest developments in the field.

In order to stimulate discussion and to increase the personal contact, the number of participants will be limited to 30 or 40. Similarly, the number of speakers will be limited, to allow adequate time for thorough treatment of the various topics.

The registration fee will be Lit 400,000.

For further details, please contact:

Prof. Niky Molho  
Dipartimento di Fisica  
Via G. Celoria 16  
20133 Milano  
Italy

Tel: (+39) 2-2392243  
Fax: (+39) 2-2392208

Please send, as soon as possible, material for the next issue of *European Medical Physics News* to:  
Mr. G. Cusick, Department of Medical Physics and Bio-Engineering, University College Hospital, 1st Floor, Shropshire House,  
11-20 Capper Street, London WC1E 6JA. Telephone: +44 71 380 0700 Fax: +44 71 380 0777

# Summary of the Scientific Committee Protocol for Reporting Patient Accidents

The Scientific Committee requests national organisations to supply information about:

**Any accident after 1st. January 1986 in which one or more patients is harmed as a result of a defect or malfunction of an equipmet or a procedure for which members of the national organisation should normally be responsible.**

The definition *includes* accidents outside the field of radiation physics or nuclear medicine. The details needed by Scientific Committee are specified in 1 to 7 below.

If necessary, an accident can be reported without saying exactly where it occurred.

Please send the information to:

Dr. J.K. Haywood, EFOMP Accident Collator  
Cleveland Medical Physics Unit, South Cleveland Hospital,  
Marton Road, Middlesbrough,  
Cleveland TS4 3BW  
England

Telephone: (+44) 642 850850 extension 20152

Fax: (+44) 642 824877

- 
- 1 **National Medical Physics Organisation** .....
  - 2 **Where and when did the accident occur?**  
Department \* ..... Address \* .....  
Hospital \* ..... Country .....  
\* Omit if confidential  
Date(s) of Accident .....
  - 3 **How many patients were injured?** .....
  - 4 **What were their injuries?** .....
  - 5 **Was there an investigation?** .....  
Who investigated? (Department, Hospital,  
Government) .....  
Is the investigation finished? .....  
What, in your opinion, was the probable cause  
of the accident .....  
What, in the opinion of the investigators, was  
the probable cause .....
  - 6 **Was equipment involved?** .....  
What kind of equipment? .....  
Who made the equipment? .....
  - 7 **Name and address of contact who can provide further information**