

europaean medical physics news

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Letter from the President

Karl Arne Jessen, President of EFOMP

As we approach the end of 1994 and the start of Röntgen's centenary year, where physics and technology in medicine will naturally be brought into focus, we should take stock. The scientific approach, based on an understanding of nature and explaining natural phenomena, will always have a solid foundation, important in a time where all groups in health care claim to work scientifically. Such a development also creates the possibility for a better understanding and communication using a more common "language" and it will challenge the administrative management to draw more logical conclusions in the chain of decisions. Physicists and Medical Physics will benefit from such a development, but we should not naïvely overlook the more political currents trying to obtain an advantage from hasty and low-budget decision making.

In 1994, EFOMP successfully ran another Summer School, in co-operation with the European Commission, in the field of Medical Physics in Diagnostic Radiology. This was the third in a series of three schools related to the Patient Directive Article 5 (EEC Directive 84/466) which sets out the need for the "qualified expert in radiophysics". The school was held in Nancy in June and was well attended, with 43 students from 15 countries indicating a strong need for such arrangements. Many thanks are due to the local organisers headed by Dr. Alain Noel, and to the French Society. EFOMP does not have the financial capacity to run Summer Schools without seeking external support or alternatively the raising the capitation fee to an unrealistically high level. The Federation has therefore very depended heavily on the support given by the EC and needs to have in mind the optimisation of this support by providing the strongest possible professional and scientific assistance under the constraints or conditions attached to the support. EFOMP will continue its search for potential sources of support, and already in 1995 the Nancy Summer School will be held again at the European Centre for Theoretical Physics in Trieste with support from IAEA and hopefully also from other sources. The education and training of young medical physicists is a very high priority.

Medical Physicists are involved in many aspects of Quality Assurance in health care and have been able to quantify physical and technical parameters essential for such programmes. This has been especially true in relation to radiotherapy, where the precision of dose delivery has found a clinically acceptable and a technically achievable level. To ensure standardization throughout Europe EFOMP can play an important role having all physicists "on board" through their national organisations. A valuable co-operation with ESTRO in this area is foreseen in the coming year.

The celebration of the Röntgen centenary will result in many national events. The ECR'95 and the 9th European Congress of Radiology in March in Vienna will of course be a great event in this respect. Once again, EFOMP is involved in sessions on the Physics of Medical Imaging, with Professor John Clifton as our subcommittee chairman. In September 95 the Röntgen Centenary Congress will be held in Würzburg under the aegis of the German Society for Medical Physics together with EFOMP and IOMP. IUPESM will be acting as sponsor. Historical and development aspects of the discovery will be the focal point with an insight on future research. EFOMP Committee and Council Meetings will be held on the same occasion.

See you in Würzburg in September!

EFOMP meets in Aarhus, 7th to 9th October 1994

Wolf Seelentag, Secretary General of EFOMP

For this year's Committee and Council Meetings our Danish colleagues had invited EFOMP to join their Annual Meeting, held in Aarhus. The Marselis Hotel provided both accommodation for all participants and rooms for the meetings. During this well organised event there was little time to enjoy it - but there was also a nice view over Aarhus Bay from our hotel rooms.

The Friday began with interesting lectures on the Medical Physics Profession: we heard about the role of our profession in Danish healthcare, and the interrelation with bioengineering - both from a Scandinavian, and a European viewpoint. Most of us would agree that medical physicists and biomedical engineers should cooperate - actually to do it seems to be easier in some countries than others. The afternoon was devoted to Medical Physics and Radiation Protection of the Patient; coming from a non-EU country I learned a lot about the aims of EU directives, and the way they are prepared, from Dr. Teunen's lecture. Also the other talks provided sufficient points for discussion during the social dinner.

Whilst the Danish colleagues attended a course in brachytherapy physics on Saturday, the EFOMP delegates were treated to a sandwich - Committee Meetings between two Officers' Meetings. Their discussions were reported during the Council Meeting on Sunday, when Karl Jessen, our President, could welcome delegates from 11 member societies. A few more member societies had been represented during the Committee Meetings - an indication for the importance of the work done within the Committees.

The President thanked Jean Claude Rosenwald again for his great effort in chairing the Scientific Committee for the previous three years, and welcomed Fridtjof Nüsslin as the new chairman. The preparations for the Röntgen Centennial Congress to be held in Würzburg from 20th to 23rd September 1995 are progressing as planned. The main topics will be both the history of applications of x-rays, and future developments. All member societies are invited to present the historical development in their countries in poster format - in this way it is hoped to show this history from a European viewpoint. The main conference language will be English - this should help to attract participants from all over Europe : so please, come along to this important event! The date for the 1996 meeting "Medical Physics '96" in Trieste has been shifted to 2nd to 6th September, avoiding a clash with the ESTRO meeting.

The work towards a "Report Clearing House" for the EFOMP "Accident Prevention Scheme" has continued: a good solution seems to be to contribute to the Reporting Scheme planned within IAEA. In this way relevant information would be pooled not only from Europe but world wide; and IAEA would ensure long term financing of the project. Whilst discussions to establish this continue, we also have to make progress within our societies - the scheme relies on information received from member societies : please, begin to discuss

with radiotherapists, hospital administrators, ... the possible consequences to establish such a scheme in your country ! John Haywood (Regional Medical Physics Dept., Cleveland Unit, South Cleveland Hospital, Middlesbrough TS4 3BW, U.K.) will provide you with further information on request.

There is also a change in the ETP Committee : Inger-Lena Lamm will take the chair at the end of 1994; Philip Dendy had led the Committee for the last four years - the work had included several policy statements. The President thanked him, and the delegates expressed their appreciation with a long round of applause. The survey on numbers of trained medical physicists was completed, and showed large discrepancies between member societies. So there is a need for further harmonisation. This is also true for registration schemes which would help to strengthen the position of our profession. The ETP Committee had completed some guidelines for setting up registration schemes; the registers would be run by national societies, but would get an "EFOMP stamp of approval" if they complied with these guidelines.

Another important professional matter are staffing levels. In view of more recent national recommendations and an EORTC statement published in "Radiotherapy & Oncology" (with subsequent correspondence), the EFOMP policy statement on this subject needs to be reconsidered. A small working group was set up to do this in close cooperation with ESTRO.

The summer school on Physics of Diagnostic Radiology, organised by Alain Noel and colleagues in Nancy in June 1994, was successful after all - the possibility of repeating this event in 1995 in Trieste, aimed more at colleagues from Central and Eastern Europe, is being discussed with IAEA. For 1996 a summer school on the Physics of Radiotherapy is planned; invitations have been received from Bratislava, Dresden, and Spain. The preparations to hold the 1997 school in cooperation with AAPM continue: the likely subject would be Interventional Radiology, and the school could be held twice, on each side of the Atlantic. In Europe it would be connected with the IOMP conference in Nice.

In conclusion - we have had another informative meeting in a very pleasant setting. 1995 will be an important year for medical physicists: the centenary of the discovery of x-rays. Can you think of a better place to celebrate this than Würzburg ? I can't - and therefore I hope to see many of you there next September (20-23)!

Röntgen Centenary Conference in Würzburg

Germany, September 10-23, 1995

Jürgen Richter, Congress President

100 years ago, Wilhelm Conrad Röntgen discovered X-rays at the University of Würzburg's Institute for Physics. To celebrate this event, the medical physics community from around the world is holding a conference in the Würzburg Congress Centre. The congress organisers are the German Society for Medical Physics (DGMP), EFOMP, IOMP and IUPESM, who are sponsoring the congress.

Invited lectures given by prominent scientists from nine countries will cover key aspects of the effects of X-rays, both in medical applications and elsewhere. The subject areas are:

- Röntgen's life and work;
- the state of physical science at the end of the 19th century;
- the influence of Röntgen's work on the development of physics and the physicists' view of the world; X-rays in the universe;
- the development of radiation dosimetry;
- the development of radiation research and radiation protection;
- the history of ionisation chamber dosimetry;
- the development of X-ray diagnosis;
- the development of radiotherapy;
- modern trends in diagnostic imaging;
- modern trends in radiotherapy.

About ninety proffered papers will cover not only radiation physics but also other fields of Medical Physics, and all will be represented in the accompanying poster exhibition. The posters will be discussed in two Poster Sessions. In addition, National Societies for Medical Physics will be displaying posters illustrating the development of the medical uses of X-rays in their countries, in a special "national poster" exhibition.

A large industrial exhibition is planned. At the time of writing, 80% of the available space has been reserved. To give participants adequate time to visit the exhibitions, the intervals between sessions have been made longer than usual.

A traditional Franconian-style evening event is planned, in the particularly appropriate setting of the Wine Press Hall of the "Bürgerspital". Röntgen's daughter lived in the retirement home located in the Bürgerspital for 20 years until her death in 1992.

The Congress is complemented by an attractive programme for accompanying persons. The University of Würzburg is organising an exhibition of "100 years of X-rays", which will be of interest to all, and will be well worth visiting. Additionally, it is worth visiting the Röntgen Memorial Place in the old physical institute. The laboratory where X-rays were discovered has been preserved and equipped with historical instruments.

The registration fee has been set at an exceptionally low level. Until the end of July, the registration fee is only DM 120, which represents exceptional value for such a conference. Registration details are available from:

Die Kongress-Partner
Bottenhomer Weg 16
D-60489 Frankfurt
Germany
Tel: (+49) 69-785050
Fax: (+49) 69-785049

Two further invited lectures go beyond physical science, and are of special interest. Professor Spindler (Innsbruck, Austria) will speak on "Research on the Ice Man", the 5000 year old human remains found recently in a glacier. The investigation includes the use of X-rays. Professor van de Weetering, from the Rijksmuseum in Amsterdam (Netherlands) will speak on "X-Rays and Art, demonstrated on Rembrandt's work". Professor van de Weetering has kindly offered to give his lecture in recognition of the contribution which X-rays have made to his work.

The success of the congress depends on your participation. I look forward to being able to welcome you to Würzburg in September!

Biomedical Radiation Physics Teaching

Yves Lemoigne, Coordinator of the Biomedical Radiation Physics Study Line, European Scientific Institute

The European Scientific Institute (ESI) based on the border between France and Switzerland, is devoted to high-level, postgraduate teaching needed for the transfer of the latest technologies between Research and potential users such as Medicine.

With specialised courses in Biomedical Physics, one aim of ESI is to give access to top level knowledge which will allow physicists to apply and further improve the latest developments of detectors, imaging and accelerators for use in fields like Diagnostic Radiology, Nuclear Medicine and Radiotherapy within their home institutions.

This will clearly be complementary to existing teaching in some European countries at graduate or postgraduate level.

The courses will help to satisfy the requirement for research in the medical applications of high level radiation physics which is continuing to increase. ESI will contribute mainly through the development of new detectors allowing reduced radiation dose, through novel Medical Imaging techniques and by developing new uses of accelerators.

To prepare the definition and the practical organisation of the study line, a workshop was held in mid October. Experts from some 14 countries participated. In parallel, a detailed investigation about present teaching of Biomedical Physics in Europe and future needs was carried out via the national representatives of the European Federation of Organisations for Medical Physics (EFOMP). Answers were received from 18 countries.

The Workshop was organised in three parts: first there was a review of emerging technologies in accelerators, detectors and imaging, which could be useful in Medical Physics in the coming years. Then came a review of training, teaching and needs for Medical Physics in some European countries. The third part was devoted to a discussion of the manner in which ESI could fulfil these needs, at least in part. This was done with the help of the Chairmen of two EFOMP committees (Prof Nüsslin from Tübingen, chairman of the Scientific Committee, and Dr Dendy from Cambridge chairman of the ETP Committee). The workshop suggested an organisation at three levels:

Level 1

The highest level will consist of one-week seminars devoted to selected topical subjects which will be extensively discussed. The intended audience comprises senior physicists and heads of Medical Physics. Such seminars will aim to provide the opportunity to initiate practical transfers of technology between high energy physics and medical physics. This will lead to an improved understanding of technical possibilities versus needs, and thus to the initiation of research projects.

It is expected that the symposia could start as early as Easter 1995, with a topic such as 'Medical imaging and new types of detector'. Many other topics have been suggested, including:

- Conformal Radiotherapy
- Functional Imaging
- Algorithms and mathematics for Imaging
- Dosimetry and microdosimetry
- Quality Assurance in Radiology and Radiotherapy
- Radiopharmaceuticals
- Non-ionising Biomedical Diagnostics

Level 2

These will be high-level courses aimed at advanced post-graduate students or physicists wishing to participate in research in medical physics. In line with ESI's orientation, these courses will be equipment and research oriented, with emphasis placed on detectors, accelerators, imaging and practical training connected to these fields. The present scheme envisages a teaching programme organised in two terms including practical sessions. Part of the practical training will be arranged in expert centres in Europe and coordinated by ESI.

Level 3

In response to the need expressed by some countries for help in starting postgraduate training programmes, some additional basic lectures may be added to the Level 2 programme, to provide basic Medical Physics teaching.

The Workshop maintained the principle that the three levels should be put in place gradually: two one-week symposia in 1995 (Level 1), in Spring and Autumn, a module of High Level courses (Level 2) in 1996, with Level 3 following later.

Constitution of ESI

ESI was formed early in 1994 as a non-profit association. As soon as regulations (being prepared by the European Union) will allow, ESI will become a European Association. The members of the Association are Universities or Research Institutions, companies, private societies, local public authorities and bodies in Europe that are automatically entitled to membership by virtue of their contribution to the operation of the Association.

Members

Centre Universitaire & Recherche d'Archamps	Archamps (France)
II Faculty of Sciences, University of Milano at Como	Como (Italy)
Geneva University	Geneva (Switzerland)
Institute of Theoretical and Experimental Physics	Moscow (Russia)
Moscow Physical and Technological University	Moscow (Russia)
IN2P3-LAPP Research Laboratory	Annecy-le-Vieux (France)
Charles University	Prague (Czech Republic)
Uppsala University	Uppsala (Sweden)
University of Mines and Metallurgy	Krakow (Poland)
Cancer Centre and Institute of Oncology	Warsaw (Poland)
Compact Detector Systems (commercial company)	Thoiry (France)

Some universities belonging to the CLUSTER network (10 European universities of Science and Technology) are under contract with ESI:

Technische Hochschule	Darmstadt (Germany)
INPG and J Fourier University	Grenoble (France)
Universitat (T H)	Karlsruhe (Germany)
Ecole Polytechnique Fédérale	Lausanne (Switzerland)

The association is open to universities or companies wishing to join.

Address

The Address of the European Scientific Institute (ESI) is:

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rolled for this first course, including 20 physicists; 8 of these are aiming for the "Fachanerkennung".

The Society organises annual scientific meetings, often in cooperation with the German and/or Austrian Medical Physics Societies, or the Swiss Society for Biomedical Engineering. Roughly once a year symposia on topics of special interest are arranged (1 or 2 days), for example on treatment planning systems, magnetic resonance processes, or predictive assays. Working groups publish recommendations (e.g. dosimetry protocols) and reports (e.g. on national dosimetry intercomparisons). A Bulletin with 2 or 3 issues per year

helps to spread information amongst the members.

Although Medical Physics in Switzerland is not as developed as in other European countries, our Society is fairly strong and active. This is possible by close cooperation with colleagues in related fields: a society combined with radiation biologists, attracting almost all senior radiotherapists as members, and cooperating with the Biomedical Engineers - the postgraduate course at ETHZ being an obvious example. So there is hope for improvement, including areas of medical physics outside the applications of ionising radiation.

Medical Physics in Switzerland

Wolf Seelentag

Medical physicists in Switzerland are organised in the "Swiss Society for Radiation Biology and Medical Physics" (SSRBMP). This society was founded in 1964 as "Swiss Society for Radiation Biology", and was later renamed when a larger number of medical physicists had joined. Many medical physicists have radiation protection responsibilities as well, and will also be members of the "Fachverband für Strahlenschutz", the German/Swiss Radiation Protection Association. In 1994 the SSRBMP has 190 members, including radiation biologists, radiation oncologists, research and government physicists, hospital engineers, retired members, and some 30 (active) hospital physicists. Eighteen of them are certified with 16 working in radiation therapy. With a population of 7 million inhabitants, this results in just over 2 experienced physicists in radiation therapy per million - a figure at the lower end of the European range (1 to 6.5 physicists/million, EFOMP survey 1994).

On the other hand there are 13 radiotherapy clinics, equipped with at least 1 linear accelerator (plus 2 under installation), which equates roughly to 1 clinic per half million inhabitants - many more centres than considered economically reasonable, for example, by the World Health Organisation which recommends a minimum of 1 million inhabitants per centre. This is due to difficult travelling conditions in mountain areas and partly due to the fact that health care is organised by the counties - and there are 26 counties.

So on average there are some two to two and a half physicists per centre, with few centres employing several physicists, and many clinics with just one single physicist. Other fields of medical radiation physics (nuclear medicine and diagnostic radiology) will usually be covered "part time" by the radiotherapy physicists. There are also several research institutions employing medical physicists, e.g. the Institute of Applied Radiation Physics (Lausanne), and the Paul-Scherrer-Institute (Villingen, working e.g. on pion and proton therapy).

The status of Medical Physics

In 1980, new legislation regulating the use of accelerators for radiotherapy came into force, making it mandatory to employ a "suitably qualified physicist". In order to help to identify "suitable qualification", in 1987 the SSRBMP set up a voluntary certification scheme (the "Fachanerkennung") for "Medical Radiation Physics". In 1988 15 physicists with long experience were awarded the certificate within a transitional regulation. In 1991 an agreement was reached with the "Swiss Society for Medical Radiology" actively to support this scheme; at the same time the subject was extended to "Medical Physics" in general, with the possibility to name a field of specialisation. As Swiss medical physicists are still predominately engaged in radiotherapy, "Medical Radiation Physics" is the only speciality which has been certified so far. The importance of this certification has been considerably advanced by the new (1994) radiation protection legislation. A physicist is now required for other radiotherapy procedures as well, and the "Fachanerkennung SSRBMP" is demanded explicitly - a big step towards state recognition. Prerequisites and procedure for the "Fachanerkennung" are :

- a university degree (at least M.Sc.) in physics or a related subject
- 3 years of practical education and training in a hospital
- lectures on medical subjects, which may be replaced by study of the literature for applicants not working at a university hospital
- guidance by a supervisor (with Fachanerkennung), who should preferably work at the same institution as the applicant, and who has to write a yearly report on the applicant's progress
- radiation protection course (at least two weeks)
- attendance of at least 4 scientific conferences
- at least 1 publication
- written and oral exams by a commission

To date there are :

- 4 certifications according to this procedure, i.e. outside the transitional regulation
- 22 practising medical physicists are certified (some with foreign training were considered equivalent, some retired)
- 9 candidates enrolled in this scheme.

The combination of small numbers of medical physics positions (relative to the population), and a small country like Switzerland, hampers the establishment of formal, university based training courses. There is no formal undergraduate training in medical physics; prospective medical physicists will get their degree in physics in general. There are limited possibilities to do the diploma work in medical physics. This winter (1994/95) a first postgraduate teaching course has been started at the Swiss Federal Institute of Technology in Zürich (ETHZ), organised by the Institute for Biomedical Engineering in close cooperation with SSRBMP. The course is designed to contain all the theoretical studies required for the "Fachanerkennung" and at the same time offers several wider options for students not aiming for the "Fachanerkennung". The lectures are complemented by practical block courses during vacations. 26 students have en-

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EFOMP Travel Award

for

Young Physicists - 1996

Sponsored by GE/CGR-MeV

Applications are now invited for the EFOMP Travel Award. The Closing Date for Applications is 1st February, 1996.

Conditions

- 1 Each applicant must submit an itinerary detailing the departments he or she wishes to visit.
- 2 The duration of the programme must be such as to include at least 10 working days (of which the first and last days may be counted) and should involve visits to departments in other countries that are members of EFOMP.
- 3 Applicants must be members of an EFOMP affiliated organisation, must be under 35 years on the date of application and must have been working as a medical physicist in either a hospital, university or research institute engaged in similar work for a period of at least two years.
- 4 Applications must be submitted to the Honorary Secretary of the respective National organisation for ratification. However, applicants are strongly advised to send a copy of their application either to the Honorary Secretary of EFOMP or to the EFOMP Registered Office, at the address below:

c/o IPSM
4 Campleshon Road
York
YO2 1PE
UK

in case the original application is delayed.

Further details of the award may be found in *European Medical Physics News*, (June, 1995) or may be obtained by writing to the EFOMP Registered Office.

Dr Inger-Lena Lamm

Chairman, EFOMP Education, Training & Professional Committee

May, 1995

The EFOMP Travel Award

Each year, EFOMP makes a Travel Award to a young physicist, with the twin aims of extending to the recipient's professional and scientific training and of fostering scientific links between EFOMP member countries. To this end, the Award is intended to support a programme of visits to Medical Physics Departments outside the recipient's home country.

The Award is made to the applicant who, in the view of the Officers of EFOMP, presents the best proposed programme of travel.

If you are interested in applying for the Award, to support travel in 1996 or 1997, you are strongly encouraged to submit your application as soon as possible. The closing date for applications is 1st February, 1996. The Rules governing the award are printed on the preceding page; further information and an application form can be obtained either from your EFOMP National Contact Person, or directly from the Chairman of the EFOMP Professional, Education and Training Committee at the following address:

Dr Inger-Lena Lamm
Radiofysik
Lunds Universitetssjukhus
S- 22185 Lund
Sweden
Tel: (+46) 46 173134
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Please send me details and application form for the EFOMP Travel Award

Name

Address

Country

Telephone

Fax