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Notes from the EFOMP Officers' Meeting

Binz — 29th and 30th October 1984

The Officers and Committee Chairman were welcomed by Dr. M. Tautz on behalf of our hosts, the Clinical Radiation Physics Section of the Medical Radiology Society of the G.D.R.

The general membership situation was discussed first. Applications for membership from the Irish Republic and Portugal were tabled. It was accepted that delegates from the National Organisations of these two countries would be invited to the 6th Council meeting in Helsinki in 1985, as new members.

Regarding the problems of the possible nine year course of office through Vice-President, President and Past-President, discussed at the 1984 London Council Meeting, the Secretary-General reported a good response from National Organisations to his consultation document. A number of alternative suggestions had been made but the only one with majority support was that the tasks of the office of Vice-President should be met in other ways. The Officers will accordingly prepare modifications to the Constitution for submission to Council.

The President set out the range of difficulties in communication facing the Federation and possible actions were discussed.

The reports from the Chairmen of the Publications and the Education Committees were presented. The continued publication of European Medical Physics News shows the success of the Editor but more contributions and news from National Organisations are needed. The surveys of training centres and on educational problems continue. The first two EFOMP Policy Documents, on Professional matters and on Education had been published and distributed.

The written reports from the Chairman of the Scientific and Professional Committees were considered. Major difficulties exist in these areas through shortage of funds to support working meetings of the Committees and all work has been attempted by correspondence. The Officers proposed to try to alleviate these difficulties.

Enquiries to National Organisations will be made for members who might participate in committee work so that proposals can be put to Council.

The next EFOMP Council meeting will be held in Helsinki on Saturday, 10th August, 1985, just before the I.O.M.P. Congress at Espoo. The programmes for the sessions of the Congress in which EFOMP is involved were discussed. The subjects are: The European Community directive on the radiation protection of the patient, quality assurance procedures in radiotherapy, assessment of medical technologies and help for developing countries.

The President was able to report some success in finding Co-operating Organisations in Industry.

At the conclusion of the Officers' Meeting Dr. Tautz arranged and attended a special meeting at which the Officers were pleased to meet representatives of some of the National Organisations that hoped to become members of the EFOMP. Among those present were Dr. V. Laginova from Czechoslovakia, Dr. G. Reischel and Dr. P. Vittay from Hungary, Dr. Tolwinski from Poland, Dr. N. Voiculescu from Romania and Professor A. M. Gurwitsch from the U.S.S.R. Dr. R. Jahren from Norway, already a member country, also attended.

J.S. Orr

BINZ IN OCTOBER

Birch trees with autumn yellow leaves, pine trees and lakes cover the sandy soil of the north German plains. Glacial effects long ago have left a string of islands between these plains and the Baltic sea. The largest of the islands is Rugen, and on its tip, near wooded chalk cliff headlands, lies Binz with kilometres of sandy beach and clear tideless sea.

Your EFOMP officers and Committee chairmen were headed towards Binz by train and car on a bright sunny October Sunday. John Clifton, Edwin Claridge and I had crossed the West-East border control at the Friedrichstrasse S-Bahn station in Berlin with much less formality than the documentation had suggested. It appeared later, however, that a detailed knowledge of the system plus determination are required if draws with the currency and visa regulations are to be achieved. We were met by Professor Siegfried Gursky of Leipzig, one of the Scientific Programme Committee of the 4th Symposium of the Clinical Radiation Physics Section of the G.D.R. Societies for Medical Radiology and for Physical and Mathematical Biology being held at Binz. Siegfried guided us with good humour and assuredness through the daunting intricacies of a long German Sunday railway journey. Our way was beguiled with science, education, wit, beer and sausages.

More than 100 G.D.R. medical physicists were at the Symposium, together with about 40 scientists from other countries. We were given a most warm welcome by Dr. Manfred Tautz of Berlin, the joint Congress President, and Professor Bernd Potschwadek of Rostock, President of the G.D.R. Physicists. Other guests included Professor Walter Lorenz of Heidelberg, President of the D.G.M.P. of the F.G.R. Professor Jurgen Rassow of Essen, future President of the D.G.M.P. and Professor Hans Leetz of Homburg, Secretary-General of EFOMP.

The scientific Congress was opened by Manfred Tautz and Jean Chavaudra, your EFOMP President. The EFOMP candle was ceremoniously lit to signify the renewed conjunction of medical physics in the G.D.R. and EFOMP. It is not, however, the purpose of this note to describe the scientific presentations or report on the EFOMP Officers' meeting, held during the next two days while the weather turned damp and misty.

During our stay we enjoyed the excellence of the meals in the Kurhaus, an impressive and spacious, nostalgically attractive hotel on the sea front. The cream cakes and confectionery with coffee were

TECHNICAL NOTE: #1 PHOTON BEAM TREATMENT PLANNING**AECLMEDICAL**

... "the aim of clinical dosimetry must be to plan and deliver the required pattern of dosage as accurately as possible, ie. (according to modern radiobiological thought), with an uncertainty of less than $\pm 5\%$."

I.C.R.U. Report 24, 1976

Most treatment planning systems miss the goal ($\pm 5\%$ uncertainty) at the plan stage, even before the physical complexities of patient set-up are accounted-for. One of the strongest advantages of AECL radiotherapy planning systems is the high quality of the algorithms used to calculate dose distributions. Both TP11 and THERAPLAN use the methods developed and proven over many years by Prof. J.R. Cunningham and his team at the Ontario Cancer Institute.

The photon beam model uses differential Scatter-Air (or Phantom) Ratios, derived from user input of measured central axis data for square fields. The same model and data is used for all beam types: SSD and isocentric, fixed and moving, rectangular and irregular. The model allows for collimator rotation and beam modifiers such as wedges, bars, or compensators with equal ease and accuracy. The differential SAR algorithm allows a correction for both the primary and scatter components of the beam; a correction that is not possible with the more common stored beam model.

At each calculation point, the primary is adjusted for: the distance from the source to the contour, any attenuating material in the path, and depth inside the patient. Scatter is handled as a function of the distance from the point of calculation and also the primary reaching the scattering volume. Hence, at each point, the scatter is a result of an integration over a large number of scattering elements. This technique is more complex than the models that are used in most competitive systems, but offers increased accuracy and a capability for handling complex as well as simple plans.

Corrections for patient inhomogeneity are made using the most rigorous algorithms available and practical. Patient contours having areas of uniform density are corrected — for using a modified Power Law Tissue-Air Ratio technique, a significant improvement over the simple linear attenuation or ratio of TAR methods. If CT data is available for a pixel based calculation, the Sontag-Cunningham Equivalent Tissue-Air Ratio method (the only one to take account of 3 dimensional scattering effects) is used. The table illustrates the relative capabilities of the methods.

Inhomogeneity Correction Method	Accounts for:				
	Field Size	Path Length	Structure Position	Structure Shape	Electronic Equilibrium
Linear Attenuation	No	Yes	No	No	No
Ratio of TAR's	Yes	Yes	No	No	No
Effective SSD	Yes	Yes	No	No	No
Isodose shift	Yes	Yes	No	No	No
Power Law TAR	Yes	Yes	Yes	No	No
Equivalent TAR	Yes	Yes	Yes	Yes	No
Volume SAR integral	Yes	Yes	Yes	Yes	No
Monte Carlo	Yes	Yes	Yes	Yes	Yes

Independently published studies have compared the Equivalent TAR method with measured data and shown errors of less than 3% in homogeneous and inhomogeneous phantoms, for beam energies ranging from cobalt to 25 MV X-Rays. This accuracy is simply not available from other models.

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AECLMEDICAL

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magnificently fattening. The biological effect of the dose was assessed by a large and somewhat frivolous party using an entertainingly demonstrative weighing machine in the town, which printed its results in units of 10 half-kilos. The low sea temperature and the grey skies dampened thoughts of Baltic bathing, although the delightfully friendly bonhomie and the central heating in the hotel would soon have warmed us up again.

Other aspect of the G.D.R. scene are rather austere, with problems partly arising from the need to export goods that are already not overplentiful in order to finance essential imports. Planning and regulations are pervasive, determining both the framework within which work is carried out and the details of the work itself. As we travelled smoothly by train back to Berlin in renewed sunshine, we thought that the outcome of a possible programme whereby children and students of real scientific promise received the same kind of individualistic coaching and encouragement for expression that is presently given, with great success, to G.D.R. athletes, might be awaited with real excitement.

J.S. Orr

(MP)² Medical Physics Mini-Profile

INSTITUT CURIE — PARIS

One of the twenty French national cancer hospitals, the medical and hospital section treats more than 3,000 new patients per year. The Institute is situated beside the Pantheon in the university area in the centre of Paris. A new hospital is planned beside the present compact site. The Institute is one of the three W.H.O. centres specialising in the treatment of accidentally irradiated or contaminated persons. Treatment apparatus includes two linear accelerators, four cobalt units and afterloading equipment. Special interests in medical physics are computerised treatment planning and microwave hyperthermia. There are three medical physicists, Jean-Claude Rosewald (Paris 329 1242 extn. 3324), Genevieve Gaboriaud and Jean Drouard.

The Binz Symposium on 'Clinical Radiation Physics'

The Clinical Radiation Physics Section of the Society of Medical Radiology of the G.D.R. held its fourth symposium on 'Clinical Radiation Physics', with international participation, at Binz, on the island of Rugen, between 28th October and 1st November 1984. At the three previous symposia there had been delegates from the Council for Mutual Economic Assistance (C.M.E.R.); at this symposium scientists from western European countries took part for the first time.

The main themes of the scientific programme, which included about 70 papers were:

- (1) The potential influence of physics and engineering developments on the quality and risk of radiological procedures. Papers were presented under five main headings: New developments (including N.M.R.); The optimisation of X-ray imaging systems; Nuclear Medicine; Radiation Protection for Patients; and Quality Assurance.
- (2) Dosimetry and irradiation planning for radiotherapy. Subjects included Irregular Fields; Neutron Therapy and Brachytherapy.

During the symposium two EFOMP meetings were held: an Officers' meeting and a meeting with the national delegates to the symposium who hope to see their own organisations affiliated with EFOMP in the future. Participants from the following countries were at Binz: Austria, Bulgaria, Czechoslovakia, the Federal Republic of Germany, France, the German Democratic Republic, Hungary, Norway, Poland, Romania, the Soviet Union and the United Kingdom. I was delighted that Prof. J. S. Orr lit the EFOMP candle during the opening ceremony of our symposium. This gesture recalled for me the Inaugural Meeting of EFOMP in London in 1980.

New developments were considered first, in an important session during which ORR and CLIFTON (London) and SCHNEIDER (Berlin) presented papers on aspects of *in-vivo* and *in-vitro* Magnetic Resonance spectroscopy and imaging. A superconducting magnet system was described by CLIFTON. It provides 1.9 T in a small volume and is used with surface coils for spectrometric investigation of P-31 metabolites in newborns, thus providing data on cerebral energy metabolism. ORR considered some of the physical aspects concerned in the evaluation of different magnetic resonance imaging systems.

A work in progress paper by VITTAY (Budapest) described an interesting fly-wheel storage mobile X-ray generator ($U_{\max} = 150\text{ kV}$, $P_{\max} = 170\text{ kW}$, $t_{\max} = 3.2\text{ ms}$) which provides an alternative to accumulator systems.

Neutron irradiation problems were discussed by RASSOW (Essen).

He considered the measurement and calculation of depth dose curves. He also described for the first time a technique of moving source neutron irradiation. MATSCHE (Berlin) discussed possible applications of the N.S.D. concept, as well as dosimetry problems with CaF_2 . LORENZ (Heidelberg) reported progress in stereotactic brain tumour therapy with implanted I-125 seeds, combined with linear accelerator beams.

There was a lengthy session on the optimisation of X-ray techniques. BRANT (Berlin) described the use of R.O.C. curves to investigate the effect of fluctuations in physical parameters such as dose-rate, HVL and intensifying screen factors. This contribution led to 'stock-taking' of quality control methods available in the G.D.R. Simple methods for the use of medical assistants are not yet available. Complex instruments which determine the M.T.F. or Wiener spectrum have been constructed. It was agreed that methods need to be standardised for use within the G.D.R. and BRANDT and STARGARDT (Berlin) will co-ordinate work on this. Using the Monte Carlo formalisation of ICRP 34, TAUZ and BRANDT (Berlin) showed the results of radiation dose calculations for single organs after standard X-ray examinations.

Problems of computer assisted tomography were considered by ROCKSTROH, GURSKY and LIEBERENZ (Leipzig). The perception of liver lesions with R.O.C. curves, volume determination of diverse organs and special methods of cardiac image reconstruction were discussed.

In Nuclear Medicine, electronic data processing from gamma cameras was first considered. SOMMER (Jena) showed how scans might be enhanced and organ (outlines) contours automatically obtained. POTSCHWADEK (Rostock) spoke about high speed algorithms for gamma fitting of activity-time curves to known mathematical functions. PLAGA et al. (Berlin) described a development, of considerable importance for the G.D.R., of a whole-body scan system with microprocessor control of the patient couch movements and software for the summation of the individual pictures.

The increased patient dose resulting from the impurities in I-123 produced by the Central Research Institute, Dresden-Rosendorf, G.D.R. was discussed by WOLLER (Dresden). (Patient exposure can be reduced if the delay between production and use is minimised). ERTL et al. (Berlin) had investigated retention and dose values after the use of Se-75 Scintarden for adrenal gland studies. Whole body counter studies of long term retention were performed on patients and mice. Results showed a high somatically effective equivalent dose compared to the usage of other radio-pharmaceuticals.

Several of the papers on quality assurance in Nuclear Medicine referred to problems associated with single parameters. The contribution of BERGMANN (Vienna) was considered to be of great importance. He reviewed the activities of national and international organisations on quality assurance. General recommendations on test measurements were described as well as world-wide experiments with 'unknown' phantoms. The situation with the G.D.R. was presented by MISCHKE (Berlin), who is leading a working group which is preparing national recommendations.

The medical and physical problems associated with irregular field irradiation were discussed. The techniques are expensive but give advantages such as: continuous irradiation, shorter treatment time than the combination of single irradiation fields; irradiation without dose overlap. DIETRICH, LEISTNER (Karl-Marx-Stadt), LAGINOVA (Bratislava) and WOLF (Berlin) had investigated different computer methods for irradiation planning for such treatments.

Further aspects of radiation therapy discussed included: tissue-phantom relations; endoprotheses in radiation fields, measurements with T.L.D.; the N.S.D. concept; dosimetry recommendations for photons and electrons at 50 MeV. Papers on quality assurance and control assurance and control followed. These stressed that an exact diagnosis is required, with histological testing of the tumour tissue. The extent of the tumour must be assessed, as must the probable effects of irradiation. Tissue inhomogeneities must be taken into account, as well as equipment parameters. These matters were considered in presentations by HUTTNER, MERKLE and WELKER (Berlin); KIRSCH (Erfurt); GESKE (Jena) and TODE (Karl-Marx-Stadt).

KOBISCHKE et al. (Berlin) summarised aspects of quality control in afterloading therapy. SCHUCHARDT (Halle) had investigated Ir-192 sources with regard to symmetric radiation fields.

The symposium provided opportunity for many interesting discussions with our guests and these raised important suggestions for future work. It is a pleasure to thank all who helped to make the symposium a success. The Vth symposium, again with international participation, will take place in 1987 and I hope that EFOMP will be involved.

M. Tautz.

EFOMP Co-operating Organisations — Company Profile



Siège Social et Usine
Rue de la Minière
B.P. 34 — 78530 BUC, FRANCE

In 1955 the Compagnie Générale de T.S.F. created a Particle Accelerator Department. Initially the products were for research centres in France and other countries but later the expertise gained was used in the construction of units on a production line basis for applications such as radiotherapy, non destructive testing and radiation processing. Success in the field of radiotherapy led THOMSON — CSF to make the radiotherapy department a subsidiary company of CGR, in 1972. The primary object of that company, CGR MeV, is the development of radiotherapy equipment and it enjoys the benefit of the marketing organisation of CGR. Sales have increased from 20 MFrancs in 1973 to 190 MFrancs in 1983.

The first electron linear accelerator of the series for radiotherapy was built in 1967 and called SAGITTAIRE and had an electron energy of 32 MeV. The next product was the 6 MeV unit called NEPTUNE. Atomic Energy of Canada, Ltd. (A.E.C.L.) has acquired a fabrication licence and markets this machine under the trade name THERAC 6 NEPTUNE. A higher energy version was also marketed and called the NEPTUNE 10 MeV. This machine is built under licence by the Nuclear Centre of Swierk, Poland and from there it is distributed to all the Comecon countries.

Survey of Training Programmes

During 1984 the EFOMP Education and Training Committee was busy conducting enquiries for the I.A.E.A. on training programmes. This work has now been completed and the Agency has accepted the 'Report of an evaluation of Training Programmes surveyed in Medical Physics Centres in Europe', presented to it by Professor Stewart Orr, the Committee chairman.

The information collected provides a wealth of data about centres that the Agency might consider as suitable bases for the training of young physicists, which it wishes to sponsor. The centres featured in the report were self selected because they responded to the Committee's enquiries.

The report discusses the problems associated with post-graduate in-service training: the need for recognition for training less clearcut and traditionally acceptable than an academic degree; the problems in providing staff time to teach; the problems of both obtaining and accepting payment for teaching; the need to select trainees who have the potential to act as managers and advocates of medical physics in the world of physicians and administrators.

All the centres surveyed proved to have attractive surroundings and recreation facilities, as well as the possibility of student accommodation. Twelve countries were represented and the training centres could often offer several languages other than the native one for general practical training, but not for formal supplementary courses. It was the opinion of the surveyors that in 'many cases excellent practical training will be gained in most of the countries surveyed even when English is the only European Language spoken by the trainee'.

The training offered at the different centres will clearly vary greatly and reflect local interest. So that it be controlled and disciplined in some degree an EFOMP work diary is suggested. The suggestion that this might be assessed and the content be made available to the Agency as a report was also made.

There were 34 individual centres which provided information for the survey. Breakdowns of the preferred areas of training for different centres are provided, as well as breakdowns of the equipment available. These should be of help in matching potential students to suitable centres.

The final section of the report considers how formal courses might be linked to training assignments. Sometimes a general physics and mathematics background course would be useful before the assignment proper. EFOMP might assist in arrangements if such courses were to be provided in Europe, or suggest possible tutors if they were to be in a developing country.

French radiotherapists recommended the production of a 20 MeV unit. In response the SATURNE unit was designed and has become the main product of CGR MeV. It has been distributed in North America by A.E.C.L. since 1980. Two newer units, the SATURNE 15 and the SATURNE 25 are also now available and a prototype 5 MeV unit called ORION was installed in a French hospital in 1983.

The company also supplies Co-60 therapy units. Until the first half of 1981 these came from A.E.C.L. but more recently a French unit designed in cooperation between the French Atomic Energy Commission and CGR MeV, called ALCYON, has been supplied. This unit uses a very simple design philosophy.

In support of the radiotherapy treatment units the company makes and supplies simulators, couches, treatment planning systems etc.

CGR MeV has also developed the activities of the former Accelerator Department of THOMSON-CSF in the field of machines for physics research and industrial use. A series of cyclotrons, many of which have medical applications, are offered. Some design effort has been shared with Sumitomo Heavy Industries, of Japan, who hold a production licence. In 1981 the first CYPRISS system, based on a model 325 cyclotron, for the hospital production of short-lived radionuclides was produced. The cyclotron type 560, operated by the Atomic Energy Commission at Saclay, France since 1982 is especially designed for radionuclide production.

CGR MeV employs 260 people and exports about 50% of its products. At November 1984, 345 linear accelerators and Cobalt units for radiotherapy had been installed and are distributed as follows:

France	33%
Rest of Europe	20%
South America	7%
North America	15%
Rest of World	26%

EFOMP welcomes CGR MeV as a co-operating commercial organisation.

Often centres offering radiation oriented medical physics training proposed basic lecture tuition to be followed by more practical work. There seems to be scope for the provision of introductory courses more centrally.

There is an important shortfall in the provision of courses on all the aspects of electro-medical equipment management.

The completion of this survey, together with its formal acceptance by the I.A.E.A. marks an important landmark for the EFOMP Education and Training Committee. The information collected can help greatly in the selection of suitable destinations for I.A.E.A. fellows. The suggestions for future developments encourage the hope that further active co-operation between the two organisations will ensue. The members of the working group from the EFOMP Education and Training committee involved in the survey were: A. Benini, J. Chavaudra, P. Inia, J. S. Orr and A. -M. Schmitt.

'Innovation in Biomedical Equipment'

A report from an E.C.E. meeting by A. Todd-Pokropek

The Economic Commission for Europe (E.C.E.) is a U.N. organisation devoted to economic affairs within Western Europe, Eastern Europe with the U.S.S.R., plus the U.S.A. and Canada! It has formal contact with governments and International Non-Governmental Organisations (N.G.O.s). It has created a working party on Engineering Industries and Automation, under the direction of the Industry and Technology section. Only member nations are formally part of the working party, but N.G.O.s are allowed (and encouraged) to attend. Under this working party, one area of interest that has been proposed for study is that of Biomedical Innovation. Only eight of the twenty-six eligible nations actually participated in the *ad hoc* meeting on this subject. However, anything that the E.C.E. does has to be performed via Foreign Ministry contact with the member nations.

The group decided to adopt the subject of Digital Image Processing as the first subject of interest in the Biomedical Equipment area. By digital image processing (D.I.P.) they mean: imaging devices incorporating D.I.P. (in particular Magnetic Resonance Imaging), D.I.P. in histo-pathology, and image networks. While this might not be the ideal subject of interest from the point of view of EFOMP, the only objection that your representative made was that the subject was NOT representative of biomedical equipment and did not have as significant an impact on health care as many other possible topics.

However, this E.C.E. working party is particularly concerned with 'hi-tech' and the subject matter seems very relevant to their other areas of interest.

The working party will therefore prepare a full report, as detailed in its Draft report, over a time scale of 18 months. This report, which is then circulated to the member nations, appears to be the only 'product' of the E.C.E. The interest is primarily economic, (e.g. how much manufacturing is going on; how much investment is required) and secondarily 'to encourage East-West cooperation'. However, there is some lip-service to the social implications. On requesting the information, it appeared that the E.C.E. has only a small budget of approximately \$4000 which can be used in this context. The only financial contribution made so far by the E.C.E. was secretarial and for translators. The value of the eventual report did not appear to be very great to your representative but it could be improved if reasonable technical expertise could be injected.

Medical Physics Exchange

Would you like to work in one of the centres in another EFOMP member's country for a while? One way that this might be achieved is through an organised exchange. Such exchanges of medical physicists between member countries are of benefit to the individuals involved. They are also of potential benefit to the Federation which has as one of its objectives the development of guidelines for education and training in Medical Physics such that comparable levels exist throughout member countries.

As a step towards the goal of easy exchange schemes the following information has been collated by Dr. A.-M. Schmitt. It consists of a list of Medical Physics Departments in the Federal Republic of Germany which are interested in receiving visiting Medical Physicists to participate in their research programmes, courses or specialists service work. In each case the name of a contact is provided. Individuals need negotiate directly the terms for a visit or exchange.

- 1 Prof. Dr. W. Frik/Dipl.-Ing H. Stockberg
Zentrum für Radiologie
AG für Med. Physik und Strahlenschutz
Rhein.-Westf. Technische Hochschule Aachen
Goethestr 27-29, D-5100 Aachen
Fields: Radiation therapy, diagnostic radiology, nuclear medicine, dosimetry and computer aided treatment planning, quality control and quality assurance.
Special equipment or facilities: SIDOS-U with C.T. link, phantoms for dosimetry, film densitometer.
- 2 Prof. Dr. D. Frost
Abt. Medizinische Physik
Rudolf-Virchow-Krankenhaus
Augustenburger Platz 1, D-1000 Berlin 65
Fields: Physics of diagnostic radiology, radiation therapy, nuclear medicine, ultrasound.
Special equipment or facilities: Data processing in radiology.
- 3 Dir. u. Prof. Dr. G. Schoknecht
Inst. f. Sozialmedizin und Epidemiologie des Bundesgesundheitsamtes
Medical Physics Unit
General-Pape-Str. 62-66, D-1000 Berlin 33
Fields: Instrumentation, performance of mass screening projects.
Special equipment or facilities: X-ray diagnostics, nuclear medicine, automatic ECG, ultrasound, thermography.
- 4 Prof. Dr. Knopp
Inst. f. klin. und experiment Nuklearmedizin der Universität
Sigmund-Freud-Str. 25, D-5300 Bonn 1
Fields: Nuclear medicine, computer applications.
Special equipment or facilities: Gamma cameras, SPECT, process control computers.
- 5 Prof. Dr. Inge. Schmitz-Feuerhake
University of Bremen
Department of Physics
Postfach 330 440, D-2800 Bremen
Fields: Nuclear medicine, radiation protection, nuclear magnetic resonance.
Special equipment or facilities: Whole body counter, instruments for scintigraphic imaging and blood flow measurements by radioactive tracer.

On behalf of EFOMP, the following statements were made: EFOMP was very interested in this subject, in particular in the way in which it affects health care and personnel; EFOMP would be prepared to assist to the 'fullest extent possible'.

It was suggested that governments and N.G.O.s would be requested to nominate Rapporteurs, who would have the function of actually contributing the material in the final report. Since there is a lack of technical expertise in general, it seems likely that EFOMP could, within the limits of what seems to be a reasonable effort, assist the E.C.E. very substantially and critically in this area. In conclusion, a useful contact was made, and the presence of EFOMP as an important N.G.O. was noted.

The next topic proposed for consideration appears to be that of 'Aids for Handicapped'.

- 6 Priv. Doz. Dr. U. Quast
Abt. F. klin. Strahlenphysik
Radiologisches Zentrum
Universitätsklinikum, D-4300 Essen
Fields: Clinical radiation physics in radiation therapy.
Special equipment or facilities: 2 linacs, 1 Co 60 unit, 1 Cs 137 unit, Ir-192 afterloading, simulator, C.T., ultrasound, treatment planning system.
- 7 Prof. Dr. J. Rassow
Inst. f. Med. Strahlenbiologie
Universitätsklinikum
Hufelandstr 55, D-4300 Essen 1
Fields: Clinical dosimetry and treatment planning for neutron therapy, new TLD developments.
Special equipment or facilities: Cyclotron facility with 7 beam extensions and isocentric neutron facility.
- 8 Dr. P. Schneider
Radiol. Inst. der Städt., Kliniken Fulda
Pacelliallee 4, D-6400 Fulda
Fields: medical physics in radiation therapy and in nuclear medicine, radiation protection.
Special equipment or facilities: Co 60/SIDOS-U/therapy with I-131/Y-90/Sr-89, 2 gamma-cameras, 2 computers, *in vitro* lab.
- 9 Prof. Dr. U. Rosenow
Abtlg. gynäkol. Radiologie
Bereich Physik
Zentrum Frauenheilkunde
Humboldtalle 3, D-3400 Göttingen
Fields: Dosimetry, radiation treatment planning.
Special equipment or facilities: Philips SL 75/20 Linac, Gammamed II high dose rate afterloading unit, RT/Plan, THERADOS RFA3 Phantom and TLD, various dosimeters.
- 10 Prof. Dr. B. Markus
Abt. f. Strahlenphysik und Strahlenbiologie
Universität Göttingen
von-Siebold-Str. 3, D-3400 Göttingen
Fields: Standard and field dosimetry of high energy X-rays and electrons.
Special equipment and facilities: Primary and secondary standard and field dosimeters, 42 MeV Betatron, 20 MeV Linac, Co 60, 10-200 kV X-rays.
- 11 Prof. Dr. K. Jordan
Abt. Nuklearmedizin und Strahlenschutz
Zentrum Radiologie
Medizinische Hochschule Hannover
Konstanty-Gutschow-Str. 8, D-3000 Hannover 61
Fields: Emission tomography — especially positron tomography.
Special equipment or facilities: Cyclotron, positron camera.
- 12 Prof. Dr. D. Fehrentz
Zentrum Radiologie der Universität (Strahlenklinik)
Voss-str. 3, D-6900 Heidelberg
Fields: Brachytherapy with afterloading machines, teletherapy with irregular fields of electron and photons.
Special equipment or facilities: SATURNE 25, 42 MeV Betatron, SELECTRON, CURIETRON.

13 Prof. Dr. W. Lorentz
Deutsches Krebsforschungszentrum
Inst. f. Nuclearmedizin
Im Neuenheimer Feld 280, D-6900 Heidelberg
Fields: Nuclear medicine, radiation therapy, radiation protection, medical radiophysics, radiation chemistry.
Special equipment and facilities: Camera systems, Co-60, LINAC, cyclotron, reactor, computer facilities, (PET), (NMR).

14 Priv. Doz. Dr. Dr. B. Glöbel
Institut f. Biophysik
Universitätskliniken, D-6650 Homburg
Fields: Radiation protection, radio-ecology, radiation therapy.
Special equipment or facilities: Alpha, beta, gamma-spectroscopy, dosimetry, afterloading, betatron, gammatron.

15 Prof. Dr. H.-K. Leetz
Institut für Biophysik
Boris-Rajewsky-Institut
Universität des Saarlandes, D-6650 Homburg
Fields: Radiation dosimetry, computerised treatment planning.
Special equipment and facilities: Computerised dosimetry equipment, electron accelerator, Co-60 equipment, afterloading.

16 Dr. V. Klitzing
Medizinische Hochschule Lünebeck
Ratzeburg Allee 160, D-2400 Lünebeck
Fields: Computerised analysis of biological data in medicine (EEG, ECG), biological effects of laser treatment.
Special equipment or facilities: Lasers (Nd-YAG, CO-2, Argon), computers, electronics laboratory, physiological laboratories.

17 Prof. Dr. J. Schütz
Radiologische Klinik d. Universität
Jungeblodplatz 1, D-4400 Münster
Fields: Radiation therapy, radiation protection.
Special equipment and facilities: 2 linacs, Co-60, Cs-137, 14 MeV neutrons, RT 200, brachytherapy, afterloading.

Book Review

History of the Hospital Physicists' Association 1943-1983

The Hospital Physicists' Association, 47 Belgrave Square, London SW1X 8QX, England. 1984. pp 169 + viii
Hard back £12, Soft back £10, Postage and packing £0.60.

The United Kingdom based Hospital Physicists' Association was born at about 3 p.m. on Friday 24th September 1943, at the British Institute of Radiology, London. From that beginning the Association has made perhaps the greatest contribution to the improvement of the international image of Medical Physics.

Forty years on from its founding the Association has published a very interesting book in which not only the history of its foundation and the activities of these past years are discussed but also (and often with subtle humour) the efforts of the pioneers of medical physics, whose names we all know so well, are described. Even if, as Professor W. V. Mayneord maintains in his introduction, the 1920s and '30s were particularly favourable for the development of the basic physics and relevant engineering of medical applications, the first steps in Medical Physics were far from easy. The name of the new profession caused problems. In 1926 Mayneord was asked 'what is a physicist?', by the governor of a hospital and the Professor adds, '... incidentally a much better name for the profession than many subsequently invented by those who should have known better ...'

The second part of the book gives us an opportunity, as already mentioned, of taking a look at the lives of medical physicists whose names we have already come across in the course of our professional activities: Boag, Chalmers, Farmer, Fowler, Gray, Jones, Lamerton, Lea, Mallard, Mayneord, Meredith, Rotblat and Spiers to name but a few. The two 'deus ex machina' of our Federation, E.F.O.M.P., also feature in this section of the book.

As Professor F. W. Spiers writes in his 'Retrospect': 'The present history bears witness to the manner in which the immense developments in the physical sciences have been applied to the medical and clinical field, and to the part played in this by hospital physicists both individually and collectively through their Association.'

The book, edited by J. W. Haggith, is warmly recommended to all Medical Physicists.

G. Poretti.

Clinical Physics and Physiological Measurement

Members are reminded that this EFOMP journal is available to them at reduced rates, for their personal use. The contents of the two most recent issues are listed below:

Volume 5, Number 3, August 1984.

Papers

The origin of platelet count and volume *E A Trowbridge, J F Martin, D N Slater, Y T Kishk, C W Warren, P J Harley and B Woodcock*
Real-time beat-to-beat measurement of conduction intervals during cardiac electrophysiological studies *R Antolini, M Kirchner, A Mongera, M Disertori and F Furlanello*

Oesophageal manometry. A comparison of hydraulic and syringe catheter infusion systems using a simple hydrostatic bench model *P J Byrne, F B Keane and T P J Hennessy*

Photon scattering measurements of calcaneal bone density: results of *in vivo* longitudinal studies *J G Roberts, J W K Lien, C A Woolever and C E Webber*

An electronic peak flow meter with optional coded display *R B Richardson, C M B Higgs, D A Lea, G T R Lewis and G Laszlo*

Stress relaxation of the human cervix: a new tool for diagnosis of cervical incompetence *W A van Duyl, A T M van der Zon and A C Drogendijk*

Short Communication

An automated microcomputer based electric response audiometry system for machine scoring of auditory evoked potentials *S M Mason and W Adams*

Book Reviews

Computerised Tomography in Neuro-ophthalmology. Radionuclide Section Scanning. Physiology. Muscles and their Neural Control. Radiation Protection Procedures in the Use of Technetium-99m

Corrigendum; Forthcoming Events and Late News

Volume 5, Number 4, November 1984

Papers

The kinematics of hip joints: normal functioning *T A Gore, G R Higginson and J Stevens*

Experimental evaluation of arterial steal in *in vitro* models of femoro-tibial bypass with adjuvant arteriovenous shunt *H Campbell, V How and P L Harris*

An analysis of the platelet and polyploid megakaryocyte response to acute thrombocytopenia and its biological implications *E A Trowbridge and J F Martin*

Estimation of glomerular filtration rate, without blood samples, during renography *D M Corrigan and S A Collis*

A feasibility study of microwave thermographic mapping for use during hyperthermia treatment *J Conway, M Hawley and A P Anderson*

Computer-aided digitisation of fundus photographs *M A Sleightholm, J Arnold, S J Aldington and E M Kohner*

A microprocessor based instrument for the spectral analysis of the EEG in anaesthesia *M A Tooley, L J Grant and A R Davies*

A phoswich multidetector probe for measuring tracheal mucus velocity *D B Yeates and M Mayhugh*

Abstracts of Proceedings: Quantitative techniques in diagnostic ultrasound

Book Reviews

Handbook of Physics for Radiologists and Radiographers. Dizziness, Hearing Loss and Tinnitus: The Essentials of Neurotology. A Guide to the Safe Use of X-Ray Diffraction and Spectrometry Equipment, Occupational Hygiene Monography No. 8. Notes on Building Materials and References in Shielding Data for Use Below 300 kVp. Protection in Nuclear Medicine and Ultrasound Diagnostic Procedure in Children NRC Report No 73.

Forthcoming Events

Book Review Index; Author Index and Title Index

Late News

SPIE Grants and Scholarships

Information has just been received on SPIE awards for 1985. The total sum available is \$45,000. Most awards are for \$1,000 to \$5,000. Awards can be made to Educational Institutions (for academic use including student travel and equipment purchase) or to individual students. An assessment of the student's potential contribution to optics or optical engineering forms the basis of the selection process for individual applicants. SPIE awards have been made annually since 1978. Applications for 1985 awards have to be submitted by May 15th. Perhaps those interested in the scheme should obtain further information so as to be ready for the 1986 round! The contact is: Mr. Warren J. Smith, Chairman, SPIE Education Committee, P.O. Box 10, Bellingham, Wa 98227-0010, USA.

I.E.C. Publication 806

Determination of the maximum symmetrical radiation field from a rotating anode X-ray tube for medical diagnosis.

This new world standard was published in December 1984. It applies to X-ray source assemblies and X-ray tube assemblies containing rotating anode X-ray tubes for use in medical diagnostic techniques in which the X-ray pattern will be received simultaneously in all points of the image reception area. The standard describes a method for the determination of the greatest geometrically symmetrical radiation field at a specified distance from the focal spot for which the percentage air kerma rate along the major axes does not fall below a permitted value.

The Standard has 21 A4 size pages and costs S.Fr. 31.

Forthcoming Meetings

Radiology '85: Information Technology in the Radiological Sciences (43rd B.I.R. Annual Congress).
17-19 April, 1985; Manchester, England.

Programme Chairman, Department of Diagnostic Radiology, University of Manchester, Manchester, M13 9PT, ENGLAND.

XXIVème Congrès de la Société Française des Physiciens d'Hôpital.
6-8 June 1985; Hotel de Ville, Tours, France.

Secretariat du XXIV Congrès de la S.F.P.H., Hôpital Jean-Bernard, Service de Radiothérapie, B.P. 577, 86021 Poitiers Cedex, FRANCE.

7th International Conference on Medical Physics and 14th International Conference on Medical and Biological Engineering.
August 11-16, 1985; Helsinki, Finland.

Mr. Hannu Seitsonen, 7th I.C.M.P. Secretary General, P.O. Box 105, 00251 Helsinki, FINLAND

Medical Informatics Europe '85

August 24-29, 1985; Helsinki, Finland.

MIE-85 Secretary General, Raija Tervo-Pellikka, The Finnish Hospital League, Toinen linja 14, SF-00530 Helsinki 53, FINLAND.

European Society for Radiation Biology: 19th Annual Meeting.

August 26-30, 1985; Prague, Czechoslovakia.

Czechoslovak Medical Society (J. E. Purkyně), Vítězného února 31, P.O. Box 88, CS-120 26 PRAGUE 2, Czechoslovakia.

European Nuclear Medicine Congress.

3-6 September, 1985; London, England.

European Nuclear Medicine Congress (1985), Institute of Nuclear Medicine, Middlesex Hospital Medical School, Mortimer Street, London W1N 8AA, ENGLAND.

2nd International Technical Symposium on Optical and Electro-optical Applied Science and Engineering.

(Organised by ANRT and SPIE; programme includes Medical Image Processing)

25 November - 6 December 1985; Cannes, France.

Judith Prado, Cannes Conference Coordinator, ANRT, 101 Avenue Raymond Poincaré, 75116 Paris, France.

1986

Thermomedia 86 — The Forth Congress of the European Association of Thermology.

10-13 September, 1986; Graz, Austria.

Dr. H. Waltner, Secretary General — Thermomedia 86, Raubergasse 27, A-8010 Graz, AUSTRIA.

Slovak Medical Society: 2nd Symposium of Radiological Physicists with International Participation.

22-24 September, 1986; Bratislava, Czechoslovakia.

Dr. Viera Laginová, Secretary General, Institute of Clinical Oncology, Heydukova 10, 812 50 Bratislava, CZECHOSLOVAKIA.

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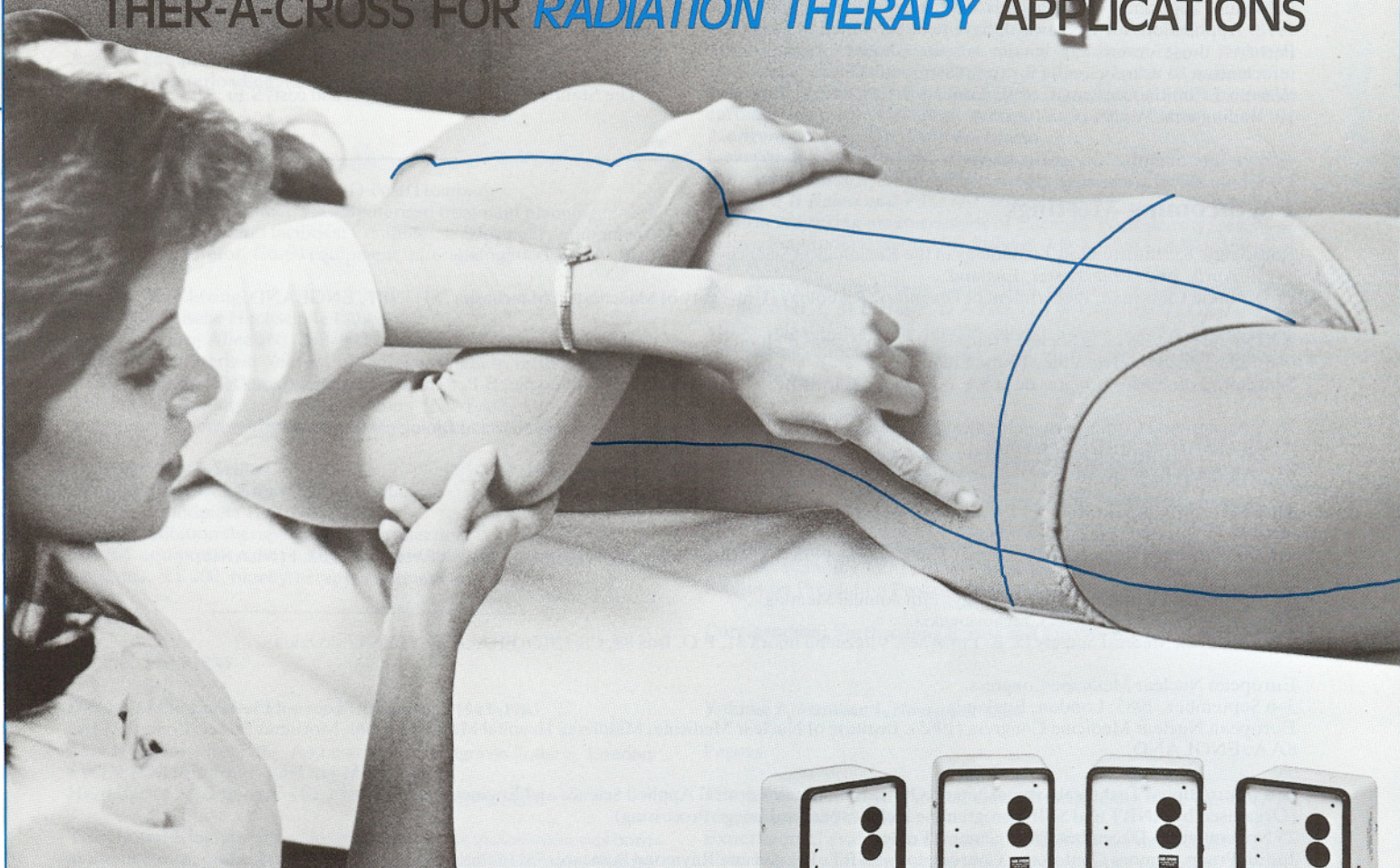
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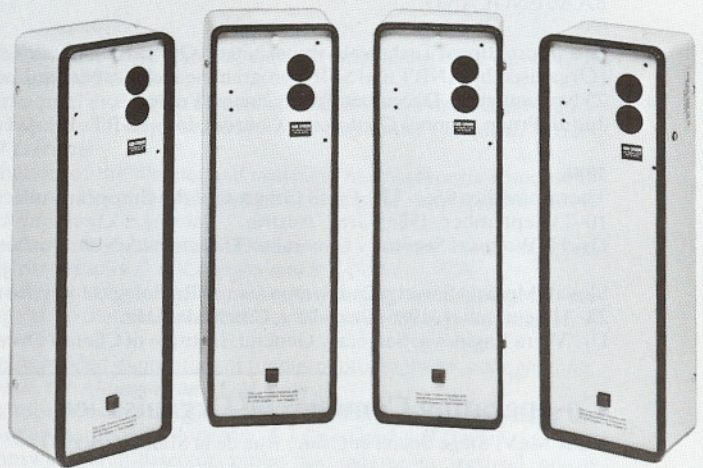
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