

# Medical Physics World

Bulletin of the International Organization for Medical Physics

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## President's Message

Dear Friends and Colleagues

As I write this message, we have passed through the unplanned and unfortunate Chernobyl reactor accident; and we are awaiting the planned event of our first Asian Regional Congress in Medical Physics, to be held at the Bhabha Atomic Research Center in Bombay, India. Each of these events deserves a few comments here.

1. Following the Chernobyl accident, many of our members worldwide were called upon to measure uptake of the radioactive fallout by individuals, to give advice concerning travel in the U.S.S.R. and other European countries and concerning edibility of foodstuffs, to predict acute and late radiation effects on exposed persons, and to answer questions on a myriad of other related matters. Our community of medical physicists deserves credit for its help in dealing with these problems.

Because of the concern of many individuals,

some countries may decide to abandon reactors, or reduce their number, as a source of electrical energy. Others will consider the build-up of carbon dioxide from the burning of fossil fuels, leading to the greenhouse effect, as a major reason for not abandoning the use of reactors. The debate on this issue will undoubtedly continue. (Medical physicists may wish to express their views in the debate by writing to the Editor of **Medical Physics World**). In this connection, there are two things which I would like to see happening in the future:

- (a) It would be of great value if, in the tradition of the Atomic Effects Foundation in Japan, where intensive scientific studies have been pursued and published concerning effects on individuals exposed to ionizing radiation, a similar foundation would be established for studies of the population exposed at Chernobyl.
- (b) The loss of reactor coolant is a major factor in present-day reactor safety. Therefore, it would

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## President's Message

perhaps be possible to design reactors that dissipate their heat safely by other means in the event of coolant loss. The technology for accomplishing this may already be at hand.

2. The plans for the meeting in India are moving forward. Although this is classified as a Regional Meeting, there will also be attendees from America and Europe.

Some delegates have stated in the past that they prefer our meetings to be exclusively on medical physics and biomedical engineering. Our regional meetings, i.e., that in Chicago in 1984 and that in Bombay in 1986, are on medical physics exclusively, whereas the international meetings in Jerusalem (1979), Hamburg (1982), and Espoo (1985) were combined, as are the coming meetings in San Antonio (1988) and Kyoto (1991). Thus, our members can take their choice of attending either combined or separate meetings.

Since the last issue of **Medical Physics World**

appeared, I have had fruitful discussions with our Secretary-General, Brian Stedeford, and our Vice President, John Cunningham. I am happy to report, for example, that progress is being made on amendments to the Statutes to permit regional and corporate membership in IOMP. We also discussed a means of establishing a permanent mailing address for IOMP.

One of the charges to the Developing Countries Committee is to look into providing scientific journals of interest to medical physicists in developing countries. If you have a set of issues of a journal which you are willing to donate to IOMP for this purpose, please notify Dr. Rune Walstam, Chairman of the Developing Countries Committee, or me. Likewise, if you need a serial set of copies of a given journal, please let us know. We have obtained some funds to cover the cost of shipment of these journals.

Brian Stedeford, John Cunningham, and I plan to attend the Regional Meeting in Bombay. We hope to see you there!

Sincerely,  
Lawrence H. Lanzl, Ph.D.

---

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#### President

**Lawrence H. Lanzl**, Ph.D., Prof.  
Medical Physics, Rush-Presbyterian-St. Luke's  
Medical Center,  
1753 West Congress Parkway, Chicago, Illinois  
60612,  
U.S.A.

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Canada

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Headington, Oxford OX3 7LJ  
United Kingdom

#### Past President

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Inst. F. Radiation Hygiene, Federal Health Office,  
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Harper-Grace Hospitals  
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Detroit, Michigan 48201,  
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**Geoffrey S. Ibbott**, M.S., Calendar of Events Editor  
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Editorial and Business correspondence should be addressed to Dr. Colin Orton.

Events information should be addressed to Mr. Geoffrey Ibbott. IOMP correspondence should be addressed to Dr. L.H. Lanzl and Dr. B. Stedeford.

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## Editorial Policy

Medical Physics World welcomes correspondence from medical physicists around the world. We are especially interested in receiving articles which review the status of medical physics in countries where "medical physics" is still a developing

profession, such as the articles on pages 4, 6, 9, 16 and 20. Please send all correspondence intended for publication **double spaced** to the Editor. Deadline for the next issue is February 1, 1987.

## Secretary-General's Report

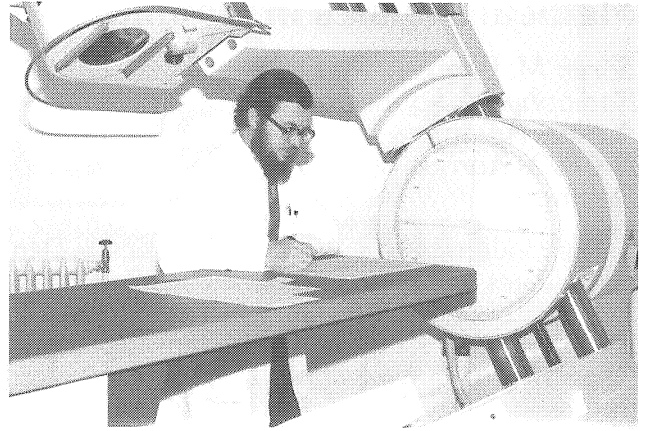
I have recently had the opportunity, through the kind offices of the Hong Kong Tourist Association, to visit what will be, I hope, by the time these words are printed our thirty-first member organization. Although the first hospital physicist came to Hong Kong from Australia in 1956, the Hong Kong Association of Medical Physics was only formed at the end of last year following a visit by our President and they have lost no time in applying to join IOMP. At present they have only 24 members, but they are very enthusiastic and we wish them every success in the future.

Some countries with relatively few hospital physicists have difficulty in forming an organization which is eligible to join IOMP, according to our present statutes. Therefore we must change our statutes! A revised version is already in draft form and under consideration by our statutes committee. I hope it will be possible to circulate a final version for mail ballot of delegates before too long, so that they can be implemented well in time for our San Antonio Conference in 1988. These will enable medical physicists to join IOMP either through a Regional Body such as the Latin-American Association, or exceptionally on an individual basis.

The statutes will also enable firms to become corporate members of our organization. This should enable them to increase their publicity with our members, as well as providing much needed funds to assist our members in developing countries. Perhaps we should not limit our purchase to firms who are corporate members, but encourage other firms with good products to become corporate members! If you contact any firms who you think would be appropriate as corporate members, please approach them informally, or let me know, or preferably both! Likewise if you meet any medical physicists from a country which does not belong to IOMP, talk to them about IOMP and let me know.

We hope that the Indian Association, in conjunction with IOMP, will have a successful Asian Conference in December. Unfortunately, it looks as if only a few people from the Asian region outside India will be able to attend, though there may be good representation from outside Asia. This is unfortunate, and is one reason why we need corporate members to assist such representation in the future. IOMP may be able to assist one or two members to attend the Bombay meeting, but at the time of writing it is not clear how many we can support.

I have recently circulated a letter from our new International Union of Physical and Engineering Sciences in Medicine requesting that our individual organizations should contact their National Acad-



*Secretary-General, Brian Stedeford at work*

emy of Science or equivalent to tell them about IUPESM, and incidentally about medical physics. Try to find out if your society has done this, because it is in your interests to put medical physics on the map. You may even be able to get some financial help from them as a result!

A motion was passed at the Council Meeting in Finland requesting member organizations to put on their letter heading that they are a member of IOMP. Do you know if your organization has done this? If not, could you find out and encourage them to do so? That would help us all to publicize Medical Physics and IOMP.

It is not too early to start considering who will be the new Officers of IOMP to be elected at San Antonio, USA in 1988. Professor Larry Lanzl will have to vacate the presidential chair, to be replaced by Professor Jack Cunningham, but he will need the support of a vice-president (who is president-elect). Also a new Secretary-General will be needed, as this is now my second term of office. All our IOMP officers so far have come from North America or Europe. Although this is also where a preponderance of our members come from, perhaps it is time to break out of this mould. Last time we had nominations from India and South America, which is a good sign. Think about it, and if you come up with any names ask one of your National Delegates to write to the President.

Finally if you think there is something IOMP should be doing and isn't, don't complain to a colleague, write and tell me!

Brian Stedeford  
Secretary-General

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### Photographic Illustrations

Readers are urged to send the Editor any photographs which may be of interest to IOMP members.  
The Editor

# Medical Physics in Denmark

*Soren M. Bentzen, Ph.D.  
Radiophysics Laboratory  
Aarhus Kommunehospital  
DK-8000 Aarhus C.,  
Denmark*

The modern history of medical physics in Denmark dates back to 1921 when Professor I.C. Jacobsen became the first physicist associated with a hospital department namely the radium centre in Copenhagen. Permanent positions for physicists in the hospitals were established in the mid fifties with the start of the radiophysics departments in Copenhagen and Aarhus. At present, close to 50 people are engaged in medical physics in Denmark (total population 5 million), most of them (90%) employed in hospitals with radiotherapy or nuclear medicine departments. Contrary to the situation in, for example, Sweden and most of the larger countries there are no institutes of medical physics at Danish universities.

The Danish Association for Medical Physics (D.A.M.P.) was founded in the autumn of 1981. Dr. Karl Arne Jessen was elected as its first chairman (1981-1986) and played a vital role in the first critical years of the association. Today, D.A.M.P. is attached to the International Organization for Medical Physics and European Federation of Organizations for Medical Physics. In addition several Danish hospital physicists are individual members of the Nordic Association for Clinical Physics (founded 1965) and the scientific societies covering the field of medicine to which their work is related.

The major problem facing D.A.M.P. - and probably well known to its sister organizations in other small countries - is the limited resources available from the modest number of members. Limitations in both manpower and finance put serious constraints on the initiatives taken by the association. However, these constraints have been - at least to some extent - compensated for by a great deal of enthusiasm among the members of the association.

One of the first initiatives from D.A.M.P. was the formation of a working group on educational problems in medical physics. This working group produced a report containing an analysis of the present status and future trends in medical physics education in Denmark. The absence of a formal education in medical physics in Danish universities makes on-the-job training indispensable. Following the suggestion of the working group an Educational Council has been formed. When someone is newly employed in the field of medical physics this council will set-up an individual plan of supplementary education to supplement the University or Poly-

technic qualifications they may have already gained. Within 2 to 3 years this should lead to recognition as a senior medical physicist.

Another aspect is the age profile of those currently engaged in medical physics in Denmark. Due to a boom in new jobs in the early seventies (1/3 of the members of D.A.M.P. started their current employment in the period 1970-75), there is a large and ever growing need for an updating of professional knowledge. This need is further stressed by the rapid scientific and technological development in medical physics in recent years. The educational council is responsible for the arrangement of at least one update/refresher course per year.

Good international relations are of utmost importance in avoiding professional isolation in a small association like ours. There is a fine tradition in Denmark that medical physicists travel abroad to work or study for a period of time.

This fact, in combination with a number of foreigners employed in jobs in Denmark, has been most fruitful in the development of Danish medical physics.

Research activities in medical physics in Denmark are strongest in the fields of basic dosimetry, clinical trials, medical imaging, hyperthermia and the development of new treatment techniques in radiotherapy. Six members of the association have obtained a Ph.D. degree in physics or medicine based on medical physics research. In 1985 the members of D.A.M.P. authored or co-authored 14 scientific papers published in international journals, and participated in 17 international meetings on medical physics or medicine. These activities were in part supported by private funds e.g. the Danish Cancer Society .

The formation of D.A.M.P. and the increased international activities has given medical physics in Denmark a valuable boost, and the present outlook is generally optimistic. It is hoped that these activities will contribute to maintain a high scientific and professional standard in Danish medical physics.

## The Developing Countries Committee 1985

*Rune Walstam*

At the council meeting in ESPOO, Finland, during the VII ICMP, a "Developing Countries Committee" was established according to a suggestion by the past president, Professor Alexander Kaul. The main duties of the Committee were outlined as follows:

1. To contact national organizations for medical physics in the developing countries to ask what spare parts or journals are needed.



2. To contact national organizations for medical physics in the industrialized countries to ask for spare parts or journals according to a list prepared from answers to the above enquiries.
3. To also give the list to 'Medical Physics World' (MPW) so that MPW can publish it and act as a clearing house.
4. To negotiate on behalf of IOMP with IAEA and WHO for financial support for transport, and in addition with those national organizations for medical physics that have offered spare parts.
5. To contact manufacturers on behalf of IOMP to financial support for colleagues of developing countries to visit training centres, regional congresses, etc.
6. To organize information from developing countries for publication in MPW so that people in these countries will not feel so isolated.

The members elected at the council meeting:

**Chairman:** Prof. Rune Walstam, Dept. of Radiation Physics, The Karolinska Institute, P.O. Box 60204, S-104 01 STOCKHOLM, Sweden.

**Secretary:** Prof. Cafiero Franconi, Med. Phys. Laboratory, Dept. of Internal Medicine, II Universitaria de Roma, via Orazio Ralmondo, 00173 ROMA, Italy.

**Members:** Dr. Cari Borrás, West Coast Cancer Foundation, Radiol. Physics Div., 50 Francisco St., Suite 200, SAN FRANCISCO, USA.

Prof. A.O. Fregene, Dept. of Rad. Biology & Radiotherapy, College of Medicine and Teaching Hospital, Lagos University P.M.B. 12003, LAGOS, Nigeria.

Dr. U. Madhvanath, Div. of Radiological Protection, Bhabha Atomic Research Centre, BOMBAY 400 085, India.

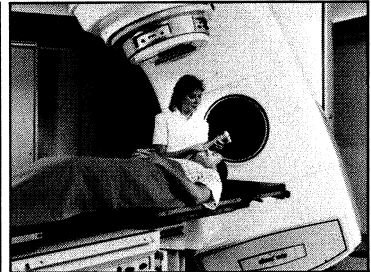
One member from LAMPA (Latin American Med. Phys. Assn) and one from UK are to be elected.

There will of course be close links with the "Education and Training Committee" under the chairmanship of Dr. Carlos E. de Almeida from Brazil, which was established at the same occasion. We also consider a close cooperation with IAEA and WHO and some regional organizations to be most important.

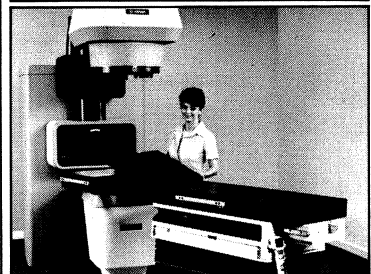
The committee welcomes all kinds of suggestions from developing countries on the needs and requirements where IOMP might be able to assist. We also welcome proposals from industrialized countries regarding available equipment, books, journals, etc., as well as available training facilities and experiences from the field and willingness to take on longer or shorter consultantships. Please to communicate with any of the members above.

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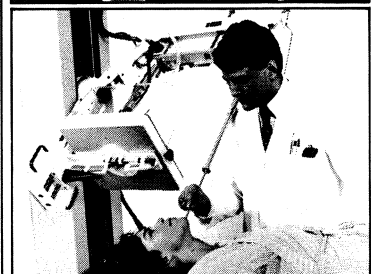
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# Education and Training of Medical Physicists in Poland: A 12-Year Experience

O.A. Chomicki, B. Gwiazdowska and E. Skrzypczak

The first impetus to starting education and training of medical physicists in Poland on a regular basis came from the IAEA/WHO two-week Seminar in 1972 at Kiel (Federal Republic of Germany) in which one of us (O.A.C.) participated. The programme set up then and there by a group of experts provided a preliminary basis for putting forward the idea of such training and, later, for initiating our own programmes adjusted to the needs and possibilities of Polish medical physics. The final programme was a result of many discussions among various specialists both in Poland and the United Kingdom.

It was soon realized that medical physics should be taught at a University rather than at a Technical University (Polish term: POLITECHNIKA), since the main bulk of candidates for medical physics would come from physics graduates. Again, the old unsolved controversy between technical schools of higher learning and universities made itself felt. Fortunately, it was at the Warsaw University (Poland's capital with a population of 1,500,000) where conditions in 1974 were ripe for starting courses in medical physics both because there were some staff ready to run them, and because there were enough facilities such as laboratories, lecture rooms, etc. available. Later, in 1979 in the Jagiellonian University of Cracow (population: 80,000) courses in medical physics were also offered.

Warsaw and Cracow have had a long tradition of physics education and research, and placed some 300 km apart, provided natural centres not only for attracting students but also for offering job opportunities for future graduates.

The system of teaching physics at the University of Warsaw consists of two stages: the first three years are devoted to general physics (experimental and theoretical), mathematics and basic laboratories, whereas in the next two years the students specialize in such fields as optics, solid state, high-energy and elementary particles, nuclear physics as well as biophysics (at the molecular level) and finally, **medical physics**. They also prepare their diploma thesis in the 5th year graduating with an M.Sc. degree.

The programme of medical physics specialization, which aims at acquainting students with a wide range of problems and activities that they may find useful in their future job, consists of lectures, seminars, problem solving classes and laboratories (see Tables I and II). As you can see, programmes

from the above two Universities differ greatly: the Cracow programme is centered around biophysical subjects. However, the common feature of both programmes is that they provide training at a rather high level of generalization. Thus the graduates are prepared to undertake work in a variety of fields and institutions, without being confined to some narrow specializations. Another feature is that, as a result of the university-type tradition, no undue stress is placed upon developing purely technical or engineering skills, which has its good and bad points.

As concerns the situation in Warsaw, the teaching staff comes not only from the Medical Physics Department of the University with its research objectives centered around such problems as the analysis of biosignals, mathematical modelling or pattern recognition, but, above all, from the Medical Physics Department of the Institute of Oncology and some other institutions like the Institute of Basic Problems in Technology, the Institute of Biocybernetics, the Centre for Postgraduate Medical Education, Central Laboratory for Radiological Protection and others.

The laboratory work is planned in such a way that each student has to carry out four minor projects lasting 6-7 weeks and constituting a part of a current research done at one of the above mentioned institutions.

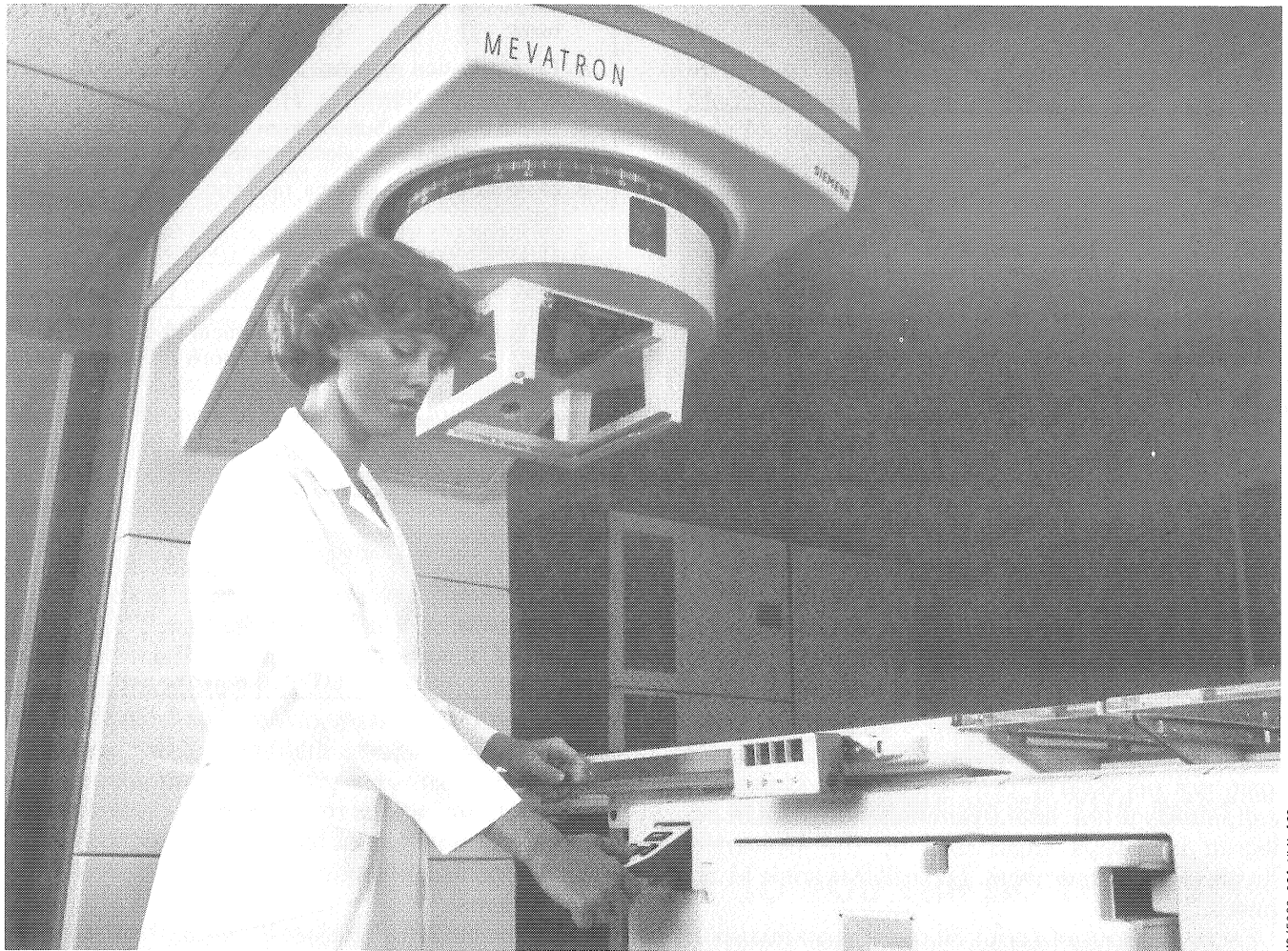
The University plays a role of a centre coordinating the educational work of many other establishments and providing a seal of approval as well as

**Table 1**

<b>Medical Physics Programme at the University of Warsaw</b>	
SUBJECT	No. of lectures (L) and problem-solving classes (P) or experimental work (E) [hours per two-term school year]
Statistical physics	90 L + 60 P
Computer programming	60 L + 60 P
Fundamentals of cell biology and physiology of higher organisms	30 L
Bioelectricity	60 L
Physical fundamentals of diagnostic methods in medicine	30 L + 15 E
Physical principles of radiotherapy planning	15 L + 10 P
Radiation dosimetry	15 L + 10 P
Mathematical modelling of processes in biology and medicine	30 L + 30 P
Medical physics laboratory	180 E
Seminar	120
M.Sc.	one full year

*Continued on page 8*

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## Education and Training of Medical Physicists in Poland: A 12-Year Experience

formal certifications. In this way, no investment costs are involved in setting up special laboratories, etc. and the students are prepared to work in real-life situations, away from University halls.

**Table 2**

<b>Medical Physics Programme at the University of Cracow</b>	
SUBJECT	No. of lectures (L) and problem-solving classes (P) or experimental work (E) [hours per two-term school year]
Thermodynamics	15 L + 15 P
Quantum chemistry	15 L + 15 P
Biophysics	30 L
Biochemistry	30 L + 30 E
Physical methods in biology and medicine	60 L
Medical instrumentation	15 L
Computer programming	15 L + 15 P
Cell biology	30 L + 45 E
Bionics	15 L
Physiology and pathophysiology	45 L + 15 E
Biology, diagnosis and therapy of cancer	30 L + 15 E

The M.Sc. thesis is always a part of some research done under the supervision of a specialist again not necessarily belonging to the University staff, although the final examination for the M.Sc. degree is always supervised by the University Physics Faculty members. Table III lists some M.Sc. theses.

Each year, out of about 50 physics graduates at the University of Warsaw some 8-9 become medical physicists, totalling 80 M.Sc. graduates over the last 12 years, of which women made exactly a half, four foreigners included. The corresponding numbers for the University of Cracow are: 25, 6 and 30.

Table IV is a break-down of graduates according to the establishments where they have found work (known to us). There has not been much difficulty so far in obtaining good positions in medical or biological institutions, such as Institutes of Oncology or university hospitals employing megavolt therapy and/or radioisotopes. It is, however, striking that some graduates have found themselves at secondary schools. We can only presume that others whose fate is unknown to us after getting married have either quit medical physics altogether or moved to another city.

The possibility of further study, especially for obtaining Ph.D. or D.Sc. degrees in medical physics,

**Table 3**

### Some M.Sc. Theses In Medical Physics at the University of Warsaw

1. The effect of some physical parameters of the Oldelft Simulix-X simulator on the quality of recorded images.
2. An analysis of the frequency spectrum of phonothyreogrammes.
3. Calculation of dose distributions in  $^{192}\text{Ir}$  treatment.
4. Determination of x-ray scattering coefficients in megavolt therapy.
5. Depth-dose distributions from electron beams for a Saturne 20 linear accelerator in tissue-like phantoms.
6. Dose rates from gamma radiation in living quarters.
7. A system for ultrasound pattern holography.

**Table 4**

### Establishments Where Medical Physics Graduates Found Work

Medical Physics Dept. University of Warsaw	7
Institute of Oncology in Warsaw	10
Hospitals and Biological Medical Institutions	7
Schools of Higher Learning	10
Secondary Schools	6
Central Laboratory for Radiological Protection	5
<b>TOTAL (known to us)</b>	<b>45</b>

is open at the University of Warsaw. In fact, seven persons have already obtained such degrees (two D. Sc. included). This provides some encouragement for doing serious research in medical physics and consequently, leads to raising the standards of Poland's medical physics as a whole.

### Conclusions

1. Over the period of the last 12 years it has become clear that medical physics is attractive to physics graduates in Poland.
2. Two of Poland's main universities have succeeded in establishing and implementing medical physics education programmes, leading to M.Sc. and Ph. D. degrees.
3. Universities seem to be the institutions of choice to be made responsible for carrying out general medical physics training, provided they cooperate closely with other institutions dealing with physics as applied to biology and medicine.
4. Inadequate training of our graduates in practical skills, especially in electronics, seems to us now the main drawback of the current medical physics programmes to be improved upon in the future.
5. Job opportunities for medical physics graduates are not bad since the position of a medical physicist has become recognized among the medical profession.

# The Status of Medical Physics in China and Development of Scientific Exchanges between CAMP and AAPM

Xie Nan-Zhu  
Professor and Chairman  
Dept. of Medical Physics  
Guangzhou Medical College  
Guangzhou City, P.R. China

Early in the 50's of the 20th Century, most of the Chinese Physicists were working in the Universities teaching Pure Physics Courses and researching on modern Physics. In the medical colleges, only a few professors of Physics had written some textbooks of Physics for medical students. In the hospitals, not many engineers were working with the Physicians or surgeons on researching medical instrumentation until the middle of the 60's.

In the middle of the 70's, Biomedical Engineering and Medical Physics were rapidly developed in the United States, Britain, West Germany and Japan. Many wonderful successes in Biomedical Instrumentation, Artificial Organs, Radiation Therapy and Medical Imaging Technology, especially the birth of CT made the "Medical World" crazy. For the first time Professor A.M. Cormack, a Physicist and G. Hounsfield, an engineer won the Nobel Prize in Medicine and Physiology in 1979. The door of researching Modern Medical Imaging Technology was widely open to the whole world. Many Chinese Physicists were very interested in researching Medical Physics and Biomedical Engineering and have done a lot on researching and developing Medical Physics.

On June 6, 1981, the Chinese Society of Medical Physics, CSMP, was established in Guangzhou. In the Opening Ceremony of the first Annual Meeting, Professor John R. Cameron, Past-President of AAPM was invited to attend the Meeting. Dr. Cameron represented AAPM giving a Congratulating Speech in the Opening Ceremony and gave lectures on "Medical Physics" for two weeks which were warmly welcomed by the Chinese Medical Physicists. It was the first time an American Medical Physicist gave lectures on Medical Physics in China. Dr. Cameron talked about TLD and bone mineral technique and exchanged science and technology with the Chinese Medical Physicists.

From 1981 to 1986, the members of CSMP increased from 700 to more than 1000. Two thirds of them are working in Hospitals or half time working in the Hospitals and cooperating with physicians or surgeons on clinical research. Many Chinese Physicists are researching on Medical Lasers, Biomedical

Magnetism, Modern Medical Imaging, Biomedical Electrodes, Biomedical Transducers, Medical Ultrasound Instruments, Medical Microwave Instruments, TLD, Artificial Organs etc.

In August 1983, Prof. Xie Nan-Zhu from Guangzhou Medical College was invited to attend the 25th Anniversary Annual Meeting of AAPM held in New York City by President of AAPM (1983) Dr. N. Suntharalingam. After the meeting Prof. Xie was invited to visit Boston, Philadelphia, Wisconsin-Madison and San Francisco. Prof. Xie met many AAPM members and understood how Medical Physics was going on in the United States, especially in researching Radiation Therapy, CT and NMR.

In November 1983, Dr. Edward S. Sternick, President of AAPM (1984) and Dr. Andrew Wu were invited to visit China and give lectures on Radiation Therapy, CT and NMR in Guangzhou and Beijing. The Chinese Physicists and engineers from 24 provinces and big cities of China came to Guangzhou Medical College hearing the lectures and exchanging ideas with Dr. Sternick and Dr. Wu. They were very interested in CT, NMR and Radiation Therapy. The lectures were very successful and the friendly relationship between Chinese Medical Physicists and American Medical Physicists was much promoted.

*Continued on page 10*

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## The Status of Medical Physics in China and Development of Scientific Exchanges between CAMP and AAPM

In July 1984, Prof. Xie Nan-Zhu was again invited to attend the Annual Meeting of AAPM and The 1st Inter-American Medical Physics Meeting in Chicago. Dr. Cameron, Dr. Suntha, Dr. Sternick, Dr. Lanzl, Dr. Fullerton and many American Physicists met Prof. Xie happily and for the first time Prof. Xie met Dr. B. Stedeford and many Medical Physicists from Canada and South America. It was a splendid meeting held by Dr. E.S. Sternick. I felt honored because all the Medical Physicists from different Countries I met in the meeting were very friendly to me.

In November 1984, I was elected as a member of AAPM. I would like to thank all my Colleagues in AAPM. I should try my best to promote the exchanges of Science and Technology between CSMP and AAPM.

In May 1985, the American Medical Physics Delegation led by Prof. Lawrence Lanzl, Ph.D. visited China and gave lectures in Beijing, Shanghai and Guangzhou. Twenty three AAPM members

including Dr. Azam Niroomand-Rad, Ph.D. and Dr. Pei-Jan Paul Lin, Ph.D. took dinner with me in the famous Guangzhou Restaurant. They were warmly welcomed by their Chinese colleagues. I talked with Dr. Lanzl, new President of IOMP, about CSMP joining IOMP. We agreed to talk again when we met at the Espoo International Conference. I talked with Dr. Lanzl and Dr. B. Stedeford (the Secretary General of IOMP) in Espoo happily on August 1985. Everything is OK, and CSMP is a new member of IOMP.

In September 1985, Prof. Stewart C. Bushong, Sc.D. from Baylor College of Medicine was invited by me to visit Beijing and Sian and gave lectures on Radiation Biology, NMR Imaging and CT. He met a lot of Chinese Medical Physicists and was warmly welcomed in Guangzhou Medical College.

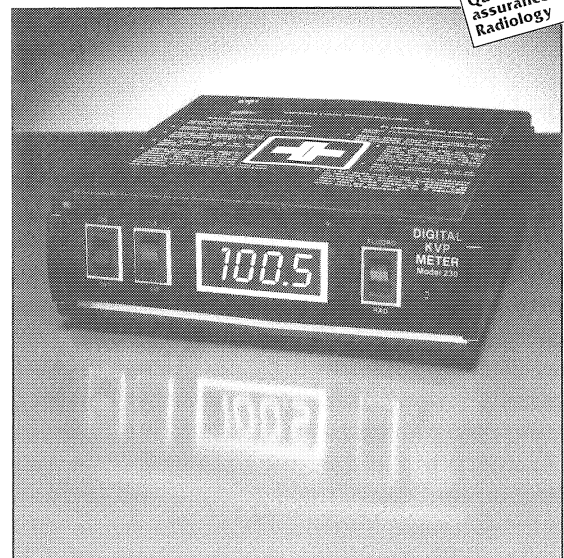
In August 1985, Dr. Hu Yi-Min from the Cancer Research Institute (Hospital) in Beijing was invited by Dr. James Purdy, President of AAPM (1985) to attend the 27th Annual Meeting of AAPM held in Seattle. The AAPM members were very friendly to him also.

In November 1985, Dr. E.S. Sternick and Dr. Andrew Wu were again invited to visit China by Guangzhou Medical College, Chinese Society of

Continued on page 15

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# CALENDAR OF EVENTS

Geoffrey S. Ibbott, Editor

1986

**October 6 - 9**

**National Conference of Standards Laboratories: Workshop and Symposium: "25 Years of Measurement Progress", (Special Anniversary Program)**, The National Bureau of Standards, Gaithersburg, MD (Mr. M.J. Corrigan, Jr., Lockheed Electronics Co., Inc., 1501 US Highway 22, MS 724, Plainfield, NJ 07061 [201-757-1600 Ext. 3023]).

**October 6 - 10**

**European School of Oncology Course on "Breast Cancer"**, Pomerio, Italy (ESTRO Secretariat, Department de Radiotherapie, Clinique Saint Rafael, 35 Chemin des Capucines, B-3000 Louvain, Belgium [016-21 22 31]).

**October 6 - 12**

**International School of Electromagnetic Fields and Biomembranes**, Pleven, Bulgaria (Prof. Marko Markov, Department of Biophysics and Radiobiology, Biological Faculty, Sofia University, 8 Dragon Tzankov Blvd., Sofia 1000 Bulgaria).

**October 24 - 26**

**10th Annual Symposium on Computer Applications in Medical Care**, Sheraton Washington Hotel, Washington, D.C. (Bruce I. Blum, SCAMC, The George Washington University Medical Center, Office of Continuing Medical Education, 2300 K Street, N.W., Washington, D.C. 20037).

**October 26 - 30**

**5th World Congress on Medical Informatics (MEDINFO '86)**, Sheraton-Washington Hotel, Washington, D.C. (MEDINFO '86 Organizing Committee, Secretariat, c/o George Washington University Medical Center, Office of Continuing Education, 2300 K Street, N.W., Washington, D.C. 20037 [202-676-8929]).

**October 30 - 31**

**John R. Cameron Medical Physics Symposium**, (in commemoration of the retirement of John R. Cameron), University of Wisconsin-Madison (Ms. Kathy McSherry, Department of Medical Physics, 1300 University Avenue, Room 1530, University of Wisconsin, Madison, WI 53706).

**November 2 - 7**

**American Society for Therapeutic Radiology and Oncology**, Bonaventure Hotel, Los Angeles, CA (A.S.T.R.O., 925 Chestnut Street, Philadelphia, PA 19107 [215-574-3150]).

**November 7 - 10**

**8th Annual Conference of the IEEE/Engineering in Medicine and Biology Society**, The Worthington Hotel, Fort Worth, TX (Charles J. Robinson, D.Sc., Program Chairman, 8th Annual EMBS Conference, Rehabilitation R & D Center, Hines VA Hospital, Box 20, Hines, IL 60141 [312-343-7200 x2240]).

**November 12 - 14**

**International Symposium on Malignant Disease in the Neck**, Free University of Amsterdam, The Netherlands (I.B. Tan, MD, Department of Otolaryngology, Free University Hospital, de Boelelaan 1117, 1081 HV Amsterdam, The Netherlands).

**November 21 - 22**

**Annual Meeting of The Austrian Society of Therapeutic Radiology and Oncology on "Advances in Interstitial and Intracavitary Radiotherapy"**, Auhof, Austria, (J. Hammer, M.D.Dpt RT, KH d. Barmherzigen Schwestern Linz, A-4020 Linz, Langgasse 16, Austria).

**November 26 - 28**

**14th Symposium of the A.T.S.R. (French Association for Technical and Scientific Radiation Protection): Radiation Protection Problems Encountered in Great Developments of New Techniques and Technologies**, Paris, France (Secretariat GRA, SPR, CEN SACLAY, 91191 GIF SUR Yvette, France).

**November 26 - 28**

**Age-Related Factors in Radionuclide Metabolism and Dosimetry**, Angers, Belgium (Dr. G.B. Gerber, Commission of the European Communities, DG XII/F1 Rue de la Loi 200, B-1049, Brussels, Belgium [Tel. 02-235 4041]).

**November 30 - December 5**

**Joint Meeting of American Association of Physicists in Medicine with the Radiological Society of North America**, Chicago, IL (AAPM Executive Director, 335 East 45th Street, New York, NY 10017 [212-661-9404]).

**December 2 - 4**

**9th Annual Mid-Winter Meeting, American Endocurietherapy Society**, Condado Plaza Hotel, San Juan, Puerto Rico (American Endocurietherapy Society, 1245 Wilshire Boulevard, Suite 217, Los Angeles, CA 90017).

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**December 5 - 7**

**Eighth Congress of the Association of Radiation Oncologists of India**, Bombay, India (Dr. Arvind Kulkarni, Organizing Secretary, Radiotherapy Dept., Bombay Hospital, Marine Lines, Bombay 400 020, India).

**December 8 - 11**

**International Topical Conference on Soft X-ray Technology**, Berlin, West Germany (SPIE, P.O. Box 10, Bellingham, WA 98227-0010 [206-676-3290]).

**December 8 - 12**

**Asian Regional Conference of the International Organization for Medical Physics**, Bombay, India (Dr. L.H. Lanzl, President, IOMP, Department of Medical Physics, Rush-Presbyterian St. Lukes Medical Centre, 1753 West Congress Parkway, Chicago, IL 60612).

**1987**

**February 8 - 12**

**Health Physics Society Midyear Topical Symposium, "Health Physics of Radiation-Producing Machines"**, Reno, NV (Mr. R.J. Burk, Health Physics Society, 1340 Old Chain Bridge Road, Suite 300, McLean, VA 22101 [703-790-1745]).

**February 19 - 22**

**Radiation Research Society, 35th Annual Meeting**, Peachtree Plaza Hotel, Atlanta, GA (Radiation Research Society, 925 Chestnut Street, Philadelphia, PA 19107).

**March 8 - 12**

**2nd International Conference on Anticarcinogenesis and Radiation Protection, Sponsored by: National Bureau of Standards, Environmental Protection Agency, and National Cancer Institute**, National Bureau of Standards, Gaithersburg, MD, (Ms. Kathy C. Stang, A353 Physics Building, National Bureau of Standards, Gaithersburg, MD 20899).

**March 10 - 14**

**27th Conference of the South African Association of Physicists in Medicine and Biology**, University of the Orange Free State, Bloemfontein, South Africa (Prof. P.C. Minnaar, Department of Biophysics, Faculty of Medicine, P.O. Box 339, Bloemfontein, 9301, Republic of South Africa).

**March 31 - April 3**

**Conference on Health Effects of Low Dose Ionising Radiation: Recent Advances and Their Implications**, Royal Institute of British Architects, London, England (The Secretariat, British Nuclear Energy Society at the Institution of Civil Engineers, 1-7 Great George Street, London SW1P 3AA [Tel. 01-630 0726]).

**May 22 - 24**

**European Society for Therapeutic Radiology and Oncology, Symposium on "Practical Planning Problems in Radiotherapy"**, Lisbon, Portugal (ESTRO Secretariat, Department of Radiotherapie, Clinique Saint-Raphael, 35 Chemin des Capucines, B-3000 Louvain, Belgium [016-21 22 31]).

**May 25 - 29**

**6th Annual Meeting of the European Society for Therapeutic Radiology and Oncology**, Lisbon, Portugal (Dr. E. van der Schueren, Department de Radiotherapie, Clinique Saint-Raphael, 35 Chemin des Capucines, B-3000 Louvain, Belgium [Tel. 016-21 22 31]).

**June 14 - 17**

**6th Congress of the European Federation of Societies for Ultrasound in Medicine**, Helsinki, Finland (6th ECUM Congress Secretariat, P.O. Box 824, SF-00101, Helsinki, Finland).

**June 22 - 25**

**9th International Conference on the Use of Computers in Radiation Therapy**. Europa Crest Hotel, Scheveningen, Tilburg, Netherlands (Ir. P.H. van der Giessen, Dr. Bernard Verbeeten Instituut, Brugstraat 10, 5042 SB Tilburn, The Netherlands).

**July 5 - 9**

**Health Physics Society, 32nd Annual Meeting**, Salt Lake City, UT (Mr. R.J. Burk, Health Physics Society, 1340 Old Chain Bridge Road, Suite 300, McLean, VA 22101 [703-790-1745]).

**July 13 - 17**

**AAPM Summer School: "Image Communication and Image Analysis"**, Ann Arbor, MI (AAPM Executive Director, 335 East 45th Street, New York, NY 10017).

**July 14 - 16**

**European Society for Hyperthermic Oncology**, Cardiff, U.K. (Dr. J. L. Moore, Velindre Hospital, Whitechurch, Cardiff CF4 7XL, U.K.).

**July 19 - 23**

**American Association of Physicists in Medicine, 29th Annual Meeting**, Detroit, MI (AAPM Executive Director, 335 East 45th Street, New York, NY 10017).

**July 19 - 24**

**8th International Congress of Radiation Research**, Edinburgh, Scotland, U.K. (Dr. E. Martin Fielden, Secretary General 8th I.C.R.R., M.R.C. Radiobiology Unit, Harwell, Didcot, Oxon OX11 ORD, U.K.).

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**July 26 - 28**

**The 3rd Conference on Spheroids in Cancer Research**, Cambridge, U.K. (Dr. P. Twentyman, M.R.C. Clinical Oncology and Radiotherapeutic Unit, Hills Road, Cambridge, CB2 2QQ, U.K.)

**August 24 - 28**

**14th Congress of the International Commission for Optics**, Quebec, Canada (L. Forget, Conference Services Office, National Research Council of Canada, Ottawa, Ontario K1A 0R6 [613-993-9009]).

**August 31 - September 4**

**Annual Conference, Australasian College of Physical Scientists in Medicine, "Engineering and the Physical Sciences in Medicine"**, Auckland, New Zealand (Mr. M.B. John, ACPSM (NZ Branch) c/o Dept. of Medical Physics and Bioengineering, Auckland Hospital, Park Road, Auckland 1, New Zealand).

**September 3 - 5**

**50th Anniversary Conference on Megavoltage Radiotherapy**, The City University, London, England (The Conference Secretariat, Concord Services Limited, 10 Wendell Road, London W12 9RT, England [01-743 3106]).

**September 7 - 11**

**European Society for Therapeutic Radiology and Oncology, Course on Radiation Physics for Clinical Radiotherapy**, Begijnhof, Louvain, Belgium (ESTRO Secretariat, Department de Radiotherapie, Clinique Saint Raphael, 35 Chemin des Capucines, B-3000 Louvain, Belgium [016-21 22 31]).

**September 11 - 14**

**L.H. Gray Trust Meeting on the Biological Effects of Low Doses of Radiation**, Oxford, UK (Mr. K.F. Baverstock, MRC Radiobiology Unit, Chilton, Didcot, Oxon. OX11 ORD, UK [Tel. Abingdon [0235] 834393]).

**September 28 - October 2**

**Seminar on Developments and Prospects in the Production and Application of Modern Equipment for Preventive Medical Treatment, Organized by The United Nations with IOMP Participation**, Piestany, Czechoslovakia (Chairman of the Organizing Committee, UN/ACE Seminar "Automation Means in Preventive Medicine" CHIRANA-Research Institute of Medical Engineering, Kamenice 3, 65809 BRNO-BOHUGOE, Czechoslovakia)

**October 23 - 29**

**American Society for Therapeutic Radiology and Oncology**, Sheraton Boston, Boston, MA (A.S.T.R.O., 925 Chestnut Street, Philadelphia, PA 19107 [215-574-3150]).

**November 1 - 4**

**11th Annual Symposium on Computer Applications in Medical Care**, Sheraton Washington Hotel, Washington, D.C. (Bruce I. Blum, SCAMC, The George Washington University Medical Center, Office of Continuing Medical Education, 2300 K Street N.W., Washington, D.C. 20037).

**November 29 - December 4**

**Joint Meeting of AAPM with the Radiological Society of North America**, (AAPM Executive Director, 335 45th Street, New York, NY 10017 [212-661-9404]).

**1988**

**April 10 - 17**

**7th International Congress: International Radiation Protection Association**, Centerpoint Convention Centre, Sydney, Australia (Mr. R.J. Burk, Health Physics Society, 1340 Old Chain Bridge Road, Suite 300, McLean, VA 22101 [703-790-1745]).

**July 4 - 8**

**Health Physics Society, 33rd Annual Meeting**, Boston, MA (Mr. R.J. Burk, Health Physics Society, 1340 Old Chain Bridge Road, Suite 300, McLean, VA 22101 [703-790-1745]).

**August 6 - 13**

**American Association of Physicists in Medicine, 30th Annual Meeting, and 8th Meeting of the International Organization of Medical Physics**, San Antonio, TX (AAPM Executive Director, 335 East 45th Street, New York, NY 10017).

**September 4 - 8**

**7th Annual Meeting of the European Society for Therapeutic Radiology and Oncology**, Den Haag, Nederland (ESTRO Secretariat, Department de Radiotherapie, Clinique Saint-Raphael, 35 Chemin des Capucines, B-3000 Louvain, Belgium [016-21 22 31]).

**October 9 - 14**

**American Society for Therapeutic Radiology and Oncology**, New Orleans Hilton, New Orleans, LA (A.S.T.R.O., 925 Chestnut Street, Philadelphia, PA 19107 [215-574-3150]).

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**November 6 - 9**

**12th Symposium on Computer Applications in Medical Care**, Sheraton Washington Hotel, Washington, D.C. (The George Washington University Medical Center, Office of Continuing Education, 2300 K Street, N.W., Washington, D.C. 20037).

**November 13 - 18**

**Joint Meeting of the AAPM with the Radiological Society of North America**, Georgia World Congress Center, Atlanta, GA (AAPM Executive Director, 335 East 45th Street, New York, NY 10017 [212-661-9404]).

**1989**

**June 18 - 22**

**Health Physics Society, 34th Annual Meeting**, Albuquerque, NM (Mr. R.J. Burk, Health Physics Society, 1340 Old Chain Bridge Road, Suite 300, McLean, VA 22101 [703-790-1745]).

**July 23 - 27**

**American Association of Physicists in Medicine, 31st Annual Meeting**, Memphis, TN (AAPM Executive Director, 335 East 45th Street, N.W., New York, NY 10017).

**October 16 - 21**

**American Society for Therapeutic Radiology and Oncology**, Bonaventure Hotel, Los Angeles, CA (A.S.T.R.O., 925 Chestnut Street, Philadelphia, PA 19107 (215-574-3150)).

**November 5 - 8**

**13th Symposium on Computer Applications in Medical Care**, Sheraton Washington Hotel, Washington, D.C. (The George Washington University Medical Center, Office of Continuing Medical Education, 2300 K Street, N.W., Washington, D.C. 20037).

**1990**

**August 5 - 9**

**American Association of Physicists in Medicine, 32nd Annual Meeting**, St. Louis, MO (AAPM Executive Secretary, 335 East 45th Street, N.W., New York, NY 10017).

**1991**

**Late July**

**19th Meeting of the International Organization of Medical Physics**, Kyoto, Japan (Dr. L.H. Lanzl, President, IOMP, Department of Medical Physics, Rush-Presbyterian St. Luke's Medical Center, 1753 West Congress Parkway, Chicago, IL 60612).

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*Readers are invited to send to the **Calendar of Events** Editor, Geoffrey Ibbott (address on p. 2), information on any events not listed in this issue of MPW and also additions or corrections to the items that are listed. Officers of national societies are especially encouraged to submit information on their future national meetings.*

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## Announcement

### International Radiation Physics Society Founded

The International Radiation Physics Society (IRPS) was founded on 29 September 1985 in Ferrara, Italy, at the beginning of the Third International Symposium on Radiation Physics.

The constitution of the IRPS defines Radiation Physics as "the branch of science which deals with the physical aspects of interactions of ionizing radiations (both electromagnetic and particulate) with matter." It thus differs in emphasis both from atomic and nuclear physics and from radiation biology and medicine, focusing on the radiations.

"The primary objective of the Society is to promote the global exchange and integration of scientific information pertaining to the interdisciplinary subject of radiation physics," including "the promotion of (i) theoretical and experimental re-

search in radiation physics, (ii) investigation of physical aspects of interactions of radiations with living systems, (iii) education in radiation physics, (iv) utilization of radiations for peaceful purposes." The Society, which will soon begin to issue a Newsletter, will continue to sponsor the ongoing series of International Symposia on Radiation Physics.

The first President of the IRPS is Dr. P.K. Iyengar, Director of the Bhabha Atomic Research Center, Bombay, India. Dr. Iyengar is well known for his many scientific contributions to the field, as well as his national and international activities in the development of science policy and promotion of technology.

Information regarding individual membership in the Society may be obtained from its Secretary: Professor R.H. Pratt, Department of Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA 15260, U.S.A. Tel: (412) 624-4304; telex 812466 (within the U.S.) and 199126 (outside of the U.S.).

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## The Status of Medical Physics in China and Development of Scientific Exchanges between CAMP and AAPM

Physics Guangdong Branch and West China Medical University giving lectures on Computer Applications in Medicine and Radiation Therapy in Guangzhou and Chengdu. Dr. Sternick and Dr. Wu also attended the 1985 Annual Meeting of the Chinese Society of Physics (established 55 years ago) Guangdong Branch. In the Opening Ceremony, Dr. Sternick represented AAPM making a Congratulating Speech and giving an invited talk on "Recent Advances of Medical Physics in U.S.A." Many famous old Professors and more than 700 Chinese Colleagues were very interested to know the splendid scientific successes of the American Colleagues. In Chengdu, Dr. Sternick and Dr. Wu gave lectures for five days. It was the first time that American Medical Physicists had given lectures on Radiation Therapy, NMR Imaging and Computer Applications in Medicine in Chengdu. The lectures were very successful and the scientific exchanges between the members of CSMP and AAPM became wider and deeper. Dr. Sternick was invited as an Honorable Professor of Medical Physics in Guangzhou Medical College and Dr. Wu as an Honorable Associate Professor.

From 1983 - 1986, many Chinese Medical Physicists, High Energy Physicists and Engineers had done a lot of Research on CT, NMR, ECT, and Ultrasound Imaging in Hospitals. There are nearly 200 CT units in China. Guangzhou Nan Fong Hospital bought the first NMR unit with an electromagnet from Bruker Company and it was used in clinical diagnosis in January 1986. Beijing, Hospital of "Temple of Heaven" bought an NMR unit with a permanent magnet from Forna Company and it will be used in clinical diagnosis by the end of July 1986. An NMR unit with a super-conducting magnet produced by Technicare will be used in the Cancer Research Institute (Hospital) of the Chinese Academy of Medical Sciences in 1987. In Guangzhou, Beijing and Shanghai, many Single Photon Emission Computed Tomography units are used in Hospitals now. Medical Ultrasound equipment is widely used in clinical diagnosis all over China.

We hope more foreign Medical Physicists of IOMP would like to visit China. As a member of AAPM, of course I would like to welcome more AAPM members visiting China, giving lectures and exchanging Sciences and technologies. I would like to try my best to arrange the lectures and tours for you. You are always welcome in our country.

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## South African Association of Physicists in Medicine and Biology

*(Miss) M.L. duPreez,  
Honorary Secretary  
(on behalf of several SAAPMB members)*

Historical facts were not mentioned when the venue for the 1985 Annual Congress of the SAAPMB was chosen. It was however quite appropriate that this, the Twenty-fifth Anniversary Congress, was held in Cape Town where eight physicists had been present at the Inaugural Meeting of the South African Association of Medical Physicists on February 1st, 1960. At that time, it was appropriate that the Inaugural Meeting was held at Groote Schuur Hospital, the first South African Hospital to appoint a physicist to serve full time on its staff as from 1953. The 1960 meeting was attended by physicists employed by various hospitals as well as by the Council for Scientific and Industrial Research and the Atomic Energy Board.

Through the years, the CSIR and AEB have been involved with various aspects pertaining to medical and health physics. This involvement became important since 1948 when physicists from the CSIR became engaged in the application of reactor produced radionuclides to a number of diverse problems. Medical applications were limited to the interests of doctors in Pretoria and Johannesburg although patients were referred from other parts of the country for tracer studies and therapy as well. The radionuclides imported for medical purposes, were mostly consignments of I-131 (very soon used on a routine basis), P-32, Fe-59, Au-198 and Na-24. The need for a radiation monitoring system was recognised very early and this resulted in the in-house system which eventually developed into the national Radiation Control Service which is still run by the South African Bureau of Standards. Concurrently with the introduction of the use of radionuclides to medical practice, the development of the national dosimetry standards laboratory at the CSIR was commenced and for many years this laboratory assisted in all types of measurements in response to requests.

When the AEB came into being, it exercised control over all aspects regarding radionuclides and this resulted in the statutory recognition of medical physicists in 1956.

By 1960, the individual medical physicists were working to a large extent in isolation because of the distances between the various centers. A meeting was thus arranged so that matters of mutual interest, scientific as well as professional, could be discussed. Professional matters had become in-



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creasingly important since the South African Medical and Dental Council was considering recognising medical physics as a supplementary health service. The time was thus ripe for the founding of the Association with the following objectives as stated in the constitution:

1. To promote the advancement of physics as applied to medicine by providing opportunities for collective discussions on scientific matters.
2. To discuss and if necessary take action in matters relating to the profession of Medical Physics.

The first Executive Committee of the Association has two members, namely Mr. P.L.M. le Roux of Groote Schuur Hospital as Chairman and Mr. D.J. Savage from the Pretoria Hospital as Secretary-Treasurer. A newspaper report about the new Association stated that there were twelve medical physicists in the country and during the first years of its existence, the membership was indeed very small. Physicists from South Africa and Rhodesia were eligible for membership. The annual meetings were held at departments where members were employed and all discussions were relatively informal although a few lectures were delivered by non-members.

The procedures followed at those early meetings were very different from those followed during the 25th Anniversary Congress of the SA Association of

Physicists in Medicine and Biology as the Association is presently called. The pattern of summer school, conference and social functions which had developed through the years, was followed but there were also extras in order to celebrate in a festive manner on this occasion. The venue was the Arthur's Seat Hotel and the Congress was held from 18 to 22 March 1985. The summer school on Dosimetry in Medical and Health Physics, held on 18 March, was well attended by scientists and physicians. Eight lectures were given with prominent contributions by overseas guests: Prof. Peter Almond from the University of Texas, USA and Dr. Keith F. Eckermann from Oak Ridge National Laboratory, USA. The conference which followed the summer school, included sessions on radiotherapy, nuclear medicine, health physics, diagnostic radiology and radiobiology. The various sessions were attended by approximately 110 scientists.

The histories of medical and health physics in South Africa were reviewed in an invited paper read at the Anniversary Congress. These histories are closely linked with that of the SAAPMB because of important decisions taken in 1967. These decisions were to offer membership of the SA Association of Medical Physicists to other than medical physicists, should they be engaged in the application of physics

*Continued on page 18*

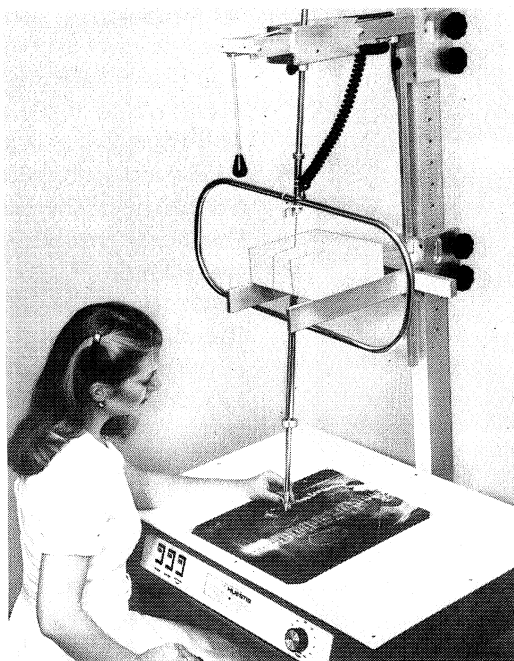
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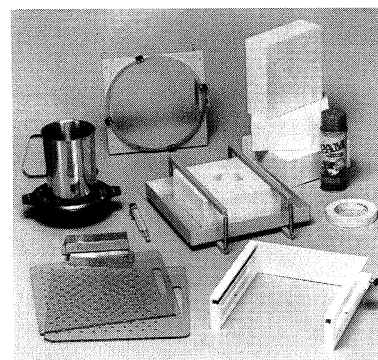
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## South African Association of Physicists in Medicine and Biology

to biology and to change the name of the Association to the SA Association of Physicists in Medicine and Biology.

As a result of these decisions, bio-physicists, health physicists and bio-engineers joined the SAAPMB and its membership increased dramatically. The SAAPMB now offers individual membership to persons and institutional memberships to organizations that subscribe to the objectives as stated in the present Constitution, namely:

1. To represent South African medical physicists, bio-physicists and health physicists nationally and internationally.
2. To foster the advancement of and to promote and uphold the status of the professions of medical physics, bio-physics and health physics in South Africa.

At the time of the Anniversary Lecture, the SAAPMB had a membership of 175, divided into 6 grades of membership.

Another result of the 1967 decisions was that the medical physicists had to form a Group in order to

deal with professional matters, especially registration with the SAMDC. Registration became a reality in 1969 when a special register for medical physicists was opened by the SAMDC. It is believed that South Africa is the first country to achieve such a registration with a statutory medical body. Recently the SAMDC has established a professional board for medical scientists and the SA medical physicists of whom there were 42 registered at the end of 1984, will have representation on this board.

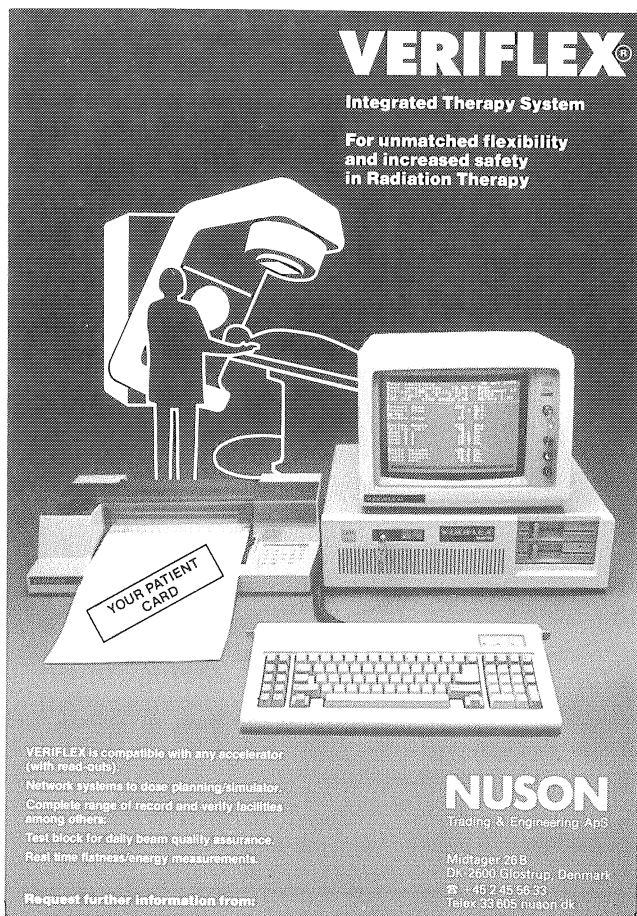
Because of their professional interests and a desire to affiliate with IRPA, the health physicists formed a Group in 1970 and the desired affiliation was effected.

The present situation is that there are 2 formal Groups, one of medical physicists and another of health physicists, each being responsible for the specific professional interests of their members but always keeping the SAAPMB Council informed of their activities and receiving the necessary backing from Council. According to the Constitution, a person must become a member of the Association first before being eligible for membership of a Group but a member of the Association may qualify for membership of both Groups.

Regarding ties with international organizations, the SAAPMB is proud to state that it has adhered to IOMP since 1965. The Group of Health Physicists has been affiliated to IRPA since 1970.

A few mile-stones in the history of the SAAPMB are worth mentioning. The name of the Association was registered with the SA Bureau of Heraldry on 8 July 1974 and registration of the motto "Per Scientiam Lux Medicinæ" (By the hands of Science (comes) enlightenment of Medicine) took place on 30 April 1976. The first formal scientific sessions were held at the 1967 Annual Congress in Durban. It was also on this occasion that a commercial firm, a friend of the SAAPMB, sponsored a social function and thus began a tradition of sponsoring which is being carried on by friends and Institutional Members of the SAAPMB, much to the benefit of the members. The first summer school, dealing with the subject "Computers in Biological Work", was organized in Johannesburg in 1969 and ever since, the annual meetings have been enthusiastically supported by members and others interested. The Council's Incentive Award was instituted in 1979 in order to encourage young members to read papers of a high standard at the annual congress. This award is sponsored by an Institutional Member while another awards a prize for the most innovative application of computers. A congress brochure is published each year since 1971.

Acting in the spirit of the objectives mentioned in the Constitution, the SAAPMB is interested in various matters and special committees are appoint-



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ed, when necessary, to investigate and advise Council on important matters. One such committee was concerned with education and training of persons in the fields of interest to the SAAPMB and this work was instrumental in decisions regarding suitable curricula and the availability of training courses at institutions of higher learning.

Some idea of the scope of the work done by members of the SAAPMB, may be obtained from the figures quoted re radiation and nuclear technology at the time of the Anniversary celebrations, namely: 14712 radiation workers were registered -some of these were concerned with x-radiation of which there were 3016 licenced users (6527 electronic products, including various medical linear accelerators of which the first one was commissioned in Bloemfontein in 1969, were licenced by the Department of Health and Welfare since 1973); there were 889 non-medical users of radionuclides; 74 medical users of radionuclides were responsible for therapy to 49403 patients and in vivo tests to 57348 patients while 1871413 in vitro tests had been done; radioisotopes were produced by the CSIR cyclotron in Pretoria and the Atomic Energy Commission; uranium was processed, a nuclear power station was

operational and a waste depository was being developed; several industrial irradiation plants were being operated; a new facility for neutron therapy, etc, was being developed.

A highlight of the Anniversary celebrations was the congress dinner which was held on the evening of March 21st at the Alphen Hotel in Constantia. On this occasion the first 25 years of the Association were reviewed in the lighter vein. Much of what was said, was news to young members but the older members could remember the thrills provided by all the new developments at a time more than 30 years ago when radionuclides were flown to the South, the cannisters being stowed away in the wing tips of aircraft for safety regarding crews and passengers and the apparatus then available to medical physicists, being a far cry from the sophisticated instrumentation of the present era. The merry atmosphere was enhanced by the performance of a Cape Malay choir and many jokes and anecdotes interspersed with witty comments by members and guests.

The President elected to lead the Association into its second quarter of a century, was Prof Dave Schackleton from the Department of Medical Physics at the Groote Schuur Hospital.

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# An Appreciation

Professor Sven Benner 1900 - 1986

One of the pioneers in international radiation physics, professor Sven Benner, Gothenburg, Sweden, died on February 25, 1986

After university studies in physics in Stockholm, he joined Rolf Sievert and Robert Thoreaus in 1930 in the Physics Laboratory at Radiumhemmet in Stockholm. This group initiated radiation physics and radiation biology in Sweden and established the Department of radiation physics, which became a university department at the Karolinska Institute in 1941. They also convinced the Swedish radiologists and authorities of the need of legislation in this field and a law on radiation protection was passed in the parliament as early as 1941.

Sven Benner's thesis in 1931 was on the Oscillation of Electrons in Magnetic Fields and his early contributions covered dosimetry and applications of Brachyradium - and Teleradium therapy. He carried out the physical studies required when James Heyman introduced the well known packing technique for radiation therapy of carcinoma of the uterus.

In 1952 Sven Benner became the head of the newly established department of Radiation Physics at the University of Gothenburg. Here he established a very ceative research group and was one of the leaders in working out the guidelines for university teaching and training programmes for hospital and health physicists in Sweden. His command of many foreign languages (at least 6!) facilitated his cooperation with colleagues in the field all over the world.

Sven Benner had a genuine interest in promoting Medical Physics in all its aspects. He took initiatives to the first Swedish Society for Hospital and Health Physicists in 1954, a Nordic Society for the same purpose in 1962 and he was an enthusiastic advocator for international cooperation in this field. He attended the meetings in Munich in 1959, Stockholm 1961 and Montreal 1962 when the concepts for IOMP were discussed and he was the Acting President of the IOMP 1963 - 1965 when the first International Conference on Medical Physics was held in Harrogate, U.K.

During all the years after his retirement Sven Benner was still very interested in the international development of medical physics and in a very friendly way he generously shared his tremendous knowledge in the field and his engagement in medical physics with us younger colleagues.

Rune Walstam

# Medical Physics in India

P.S. Iyer

## Introduction

Medical physics started to grow in India, though modestly, soon after the early telecobalt machines began functioning in Madras, Ahmedabad and Bombay in the late 1950's.

Reportedly, half a million people die of cancer annually in India. Though many cancers are detected in this country only at late stages, efforts are on for the early detection of cancer and to emphasize that many cancers detected early are curable. More and more radiation therapists resort to curative and radical forms of treatment. Many of them, particularly of the younger generation, recognise that correct treatment planning including exact delineation of tumour volume, reproducibility of irradiation conditions on a day-to-day basis and accurate clinical dosimetry in vivo, good quality treatment machines, detection equipment and other accessories are essential for this and for meaningful comparison of clinical results.

The atomic energy programme in this country has given a strong impetus to the use of radiation in medicine. There were 4 teletherapy units in this country in 1960, 75 in 1972 and 124 in 1984. Table 1 gives the details regarding the number of beam therapy centers and units in our country as on 31.12.1984. (Presently we have 135 beam therapy units in 90 centers).

Table 2 gives details regarding brachytherapy facilities in this country. A large proportion of radium sources are not used and efforts are being made to substitute these with Cs-137 or Co-60 sources.

**Table 1**

Beam Therapy Centres and Units		
Number of Centres	—	83
Number of Cobalt Units	—	107
Number of Cesium Units	—	9
Number of Linear Accelerators	—	7
Number of Betatrons	—	1
Total Number of Units	—	124

**Table 2**

Brachytherapy Centres		
Number of Brachytherapy Centres	:	85
Number of Centres Having Radium	:	65
Amount of Radium in India	:	20 g
Approx. Number of Radium Tubes and Needles	:	4500
Amount of Cobalt - 60 (Tubes and Needles)	:	2.5 Ci
Amount of Cesium - 137 (Tubes and Needles)	:	1 Ci
Number of Remote After-Loading Applicators	:	12
(Cathetron)	:	3
Selectron	:	6
Curietron	:	2
Ralstron	:	1)

## Government Requirement

The Government of India has appointed a Standing Committee on Teletherapy Units in India presided over by the Director General of Health Services to authorise procurement of teletherapy units in the country, whether funded by Government or private organizations. One of the stipulations of this Committee is that proper staff including qualified medical physicists must be available in such institutions. The Department of Atomic Energy also stipulates this.

Table 3 gives the details regarding the distribution of beam therapy units and medical physicists in radiation therapy centres.

A few centres do not have qualified physicists and necessary action to overcome this deficiency has been initiated.

## Training and Qualifications

Among the physicists, 80 have completed the one year training programme of D.R.P., B.A.R.C., 19

are certified by D.R.P. and 14 have been trained abroad or in local institutions. 28 physicists have B. Sc. degrees, and 69 have M. Sc. degrees. Of the 20 having Ph. D. degrees, 13 got these degrees while in service.

By the late 1950's the country had a few medical physicists. By early 1960's, the requirement regarding training of medical physicists was realised by the late Dr. Homi Bhabha and his colleagues at the then Atomic Energy Establishment, Trombay, presently known as Bhabha Atomic Research Centre (B.A.-R.C.). The Division of Radiological Protection (D.R.P.) of this Centre started a one year post-graduate diploma course in 'Hospital Physics and Radiological Physics' initially in collaboration with the World Health Organisation and presently affiliated to the Bombay University. The 23rd batch completed the course in September 1985. Fortunately, as stated earlier, the availability of the medical physicist in beam therapy centres is a governmental requirement and the above training programme is such that it caters to the needs of institutions in all parts of the country.

Recently Anna University, Madras, has started a two-year programme leading to M. Sc. in Medical Physics. A few more centres are planning to start such training programmes.

## Future

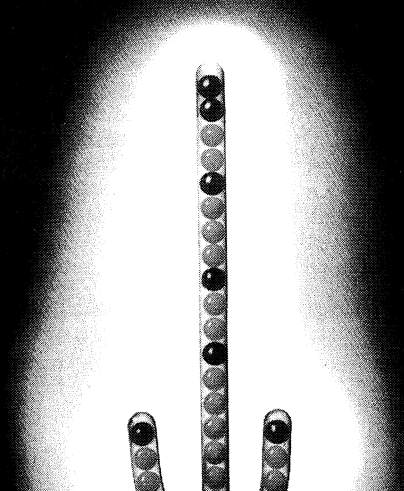
The average age at death of the Indian population has risen from 27 to 55 years during the last 35

*Continued on page 22*

**Table 3**

Details of Beam Therapy Centres and Physicists		
Units in One Centre	Number of Centres	Number of Physicists
1	58	54
2	18	30
3	3	14
4	2	5
5	1	6
7	1	9
Total	83	118

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## Medical Physics in India

years. This implies that the society is having more and more numbers of aged persons. During this period, the health care system in the country has improved considerably, and no or very few people die of diseases such as malaria, small-pox and typhoid.

Undoubtedly, one of the major killer diseases of the future will be cancer. A recent report stated that the cancer incidence in this country is estimated to rise to 2000 cases per million persons per year by 2000 A.D.

Even if the yardstick of the World Health Organisation, i.e., one beam therapy unit for 500 new cases per year is upwardly modified, we will still need over 1000 such units by that time.

Telecobalt units will be the country's mainstay for years to come. With the availability of kilocurie sources and the present efforts for manufacturing of telecobalt units in this country, there is a strong potential for the increase in the number of these units.

Indigenous low energy photon accelerator is being used in industry in the country at present, and development of medical linear accelerator will follow. These will require additional medical physicists and the planning of future training programmes should take this into account.

### Career Prospects

The problem of availability of good physicists is closely linked with the career opportunities. In addition, adequate facility must be provided to the physicist to carry out his required assignments. It may be pointed out that only one-third of the number of candidates who have undergone the training programme in BARC have been absorbed in hospitals. A good number are lost to industries using radiation sources.

Presently physicist's duties are primarily in radiation therapy. With the advent of new techniques such as nuclear magnetic resonance, lasers, hyperthermia, computer-assisted radiation therapy, total body irradiation, intraoperative radiation therapy, and high intensity remote afterloading applicators—only to mention a few—the duties of the medical physicist are bound to grow and diversify in the years to come.

### Professional Association

The Association of Medical Physicists of India was formed in 1976. The Association has served as a forum for the exchange of information at national and international levels. It has organised a number of conferences, symposia and workshops. The Association is affiliated to the International Organisation for Medical Physics and will be organising the Asian Regional Conference on Medical Physics in Bombay during December 8-12, 1986.

Presently, the Association has about 500 active members. In addition to hospital-based physicists, the membership also includes several physicists working in medical physics-related specialties in research and developmental organisations.

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- 1) **Plenary Sessions.** The plenary sessions will include keynote speakers and congress-wide symposia. These will be organized to provide an integrated view of the application of physics and engineering to selected problems in medicine and biology.
- 2) **Specialty Symposia.** These symposia will focus on recent advances in specialized areas of medical physics and bioengineering. They will be a part of

the Congress Program organized and sponsored by the participating national and international societies.

- 3) **Contributed Paper Sessions.** Contributions to both oral and poster sessions will be solicited. These sessions will be held as parallel sessions and organized to encompass the broad range of bioengineering and medical physics specialty interests. Each contributed paper session will focus on detailed developments at a level of interest to the specialist.
- 4) **Commercial Exhibits.** Exhibits of medical physics and bioengineering equipment will be organized to give participants the opportunity to conveniently review new equipment developments.
- 5) **Tutorial Sessions and Workshops.** Educational sessions and workshops will provide participants the opportunity to extend and expand their educational backgrounds.
- 6) **Scientific Tours.** Tours to local facilities as well as pre- and post-conference tours in other cities will be offered to participants. These tours are planned to be of particular interest to international participants.

All aspects of the scientific program will be documented in the conference proceedings. These proceedings are included in the conference registration fee and will be available at registration.

For more information contact:

Gary D. Fullerton, Ph.D.  
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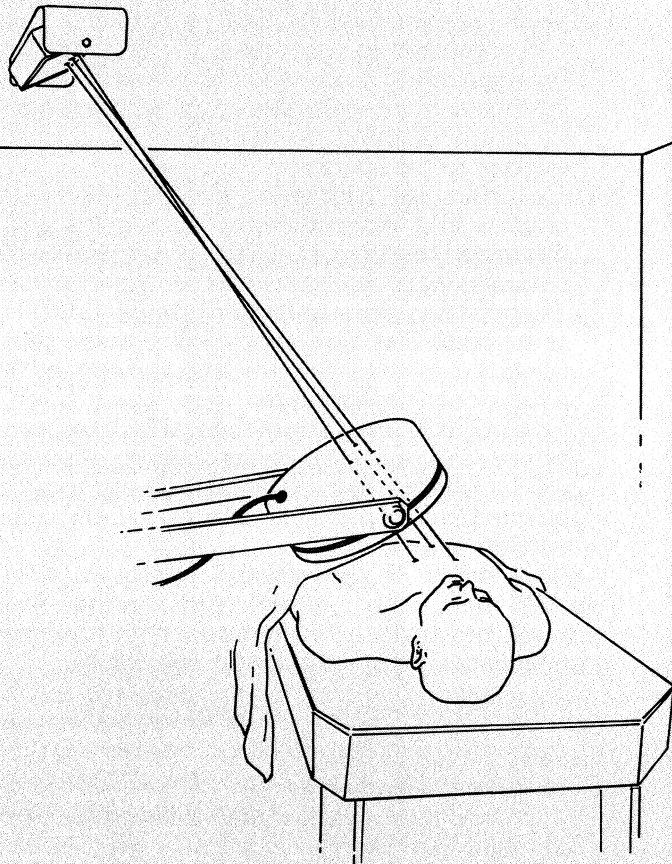
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