

## Newsletter/Nuusbrief 10

April 1998

### News from :

- [Addington Hospital \(Durban\)](#)
- [Universitas Hospital \(Bloemfontein\)](#)
- [MEDUNSA / Ga-Rankuwa Hospital \(Pretoria\)](#)
- [Hillbrow Hospital \(Johannesburg\)](#)
- [Tygerberg Hospital \(Belville\)](#)
- [Groote Schuur Hospital \(Cape Town\)](#)
- [National Accelerator Centre \(Faure\)](#)

### Reports :

- [Chairman's Report : 1997/1998](#)
- [Professional Board for Medical Science](#)
- [11th International Congress on Medical Physics and Biomedical Engineering](#)

### **ADDINGTON HOSPITAL, Durban: Dr William Rae**

This past year has been fairly uneventful. The major change was that Mr Tony Houlder retired after thirty years in the department. He left us in September. We wish him all the very best in the years ahead.

The other personal news of late is that Bertus Oelofse became a proud and grateful father again, with the birth of his daughter in February.

The Kwa-Zulu Natal hospitals have not been getting a lot of new equipment lately. We have been concentrating on getting to work on the MRI unit at Wentworth Hospital and are involved in several clinical research projects. Our main focus of research in the future will be functional MRI, including perfusion and diffusion measurement.

We hope that the New Durban Hospital will be complete in the 2001, and there has been some progress. King Edward VIII hospital is in the process of being rebuilt. This will cause some difficulties but these will hopefully be transient. We are looking forward to the future of Medical Physics in KZN.

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## **UNIVERSITAS HOSPITAL, Bloemfontein: Prof. Tys Lotter**

Gedurende die afgelope jaar het ons departement se naam verander van die Departement Biofisika na die Departement Geneeskundige Fisika.

### 1. Navorsing

Die volgende navorsingsprojekte is tans onderweg:

#### Mediese Fisika vir Kerngeneeskunde

Johan v Staden, A van Aswegen, en CP Herbst: Die berekening van linker ventrikulêre funksie deur gebruik te maak van gehekte tomografiese Tc-99m-sestamibi beelde.

Johan Marais en A van Aswegen. Kwantisering van radionuklidverspreiding deur planare beelding met 'n sintillasiëkamera.

Pieter du Toit en MG Lötter. Evaluation of a scanning transmission line source for attenuation correction with single photon emission computed tomography.

H Naude, A van Aswegen en CP Herbst. Scatter and attenuation correction techniques for absolute quantification of radionuclide distributions with SPECT.

#### Mediese Fisika vir Diagnostiese Radiologie

Die instelling van 'n basiese mammografie gehalteversekeringsprogram op 'n daaglikse sowel as weeklikse basis.

Die gebruik van Al stapwigte vir die nagaan van kV en moontlik ook mAs tydens die normale gehalteversekering.

#### Mediese Fisika vir Onkoterapie

JAH de Lange, J Duvenage en CA Willemse. A computer based procedure for quality assurance of set-up parameters and dose distribution in radiation therapy.

FCP du Plessis en CA Willemse. Development of a Monte Carlo simulation method for the evaluation of dose distribution calculations of radiotherapy treatment planning systems.

JS Engelbrecht en CA Willemse. Optimization of radiation therapy treatment plans using biological end points and dose constraints.

G Gert, J Duvenage en CA Willemse. Beeldregistrasie en gelyktydige vertoon van MR en RT beelde op die CADPLAN beplanningstelsel.

### 2. Akademiese aktiwiteite

#### 2.1 Subsidiedraende publikasies:

1. Louw WK, Dormehl IC, Van Rensburg AJ, Hugo N, Alberts AS, Forsyth OE, Beverley G, Sweetlove MA, Marais J, Lötter MG and Van Aswegen A. Evaluation of Samarium-153 and Holmium-166-EDTMP in the normal baboon model. Nucl Med Biol 1996, 23(8): 935 - 940.
2. Raubenheimer B.C., Smit H.J. The source of TeV gamma-rays in Cen X-3 and Vela X-1. Astroparticle Physics 1996, 7: 63-71.
3. Van Aswegen A., Roodt A., Marais J., Botha J.M., Naudé H., Lötter M.G., Goedhals L., Doman M.J. and Otto A.C. Radiation dose estimates of <sup>186</sup>Re-

hydroxyethylidene diphosphonate for palliation of metastatic osseous lesions: an animal model study. *Nuclear Medicine Communications*, 1997, 18: 582-588.

4. Pretorius P.H., Weishi X, King M.A., Tsui B.M.W., Pan T.S. and Villegas B.J. Evaluation of right and left ventricular volume and ejection fraction using a mathematical cardiac torso phantom. *Journal of Nuclear Medicine*, 1997, 38(10): 1528 – 1535.

## 2.2 Abstrakte nasionale en internasionale kongresse.

Otto AC, Du Toit DJR, Pretorius PH, Lötter MG, Van Aswegen A. The effect of exercise on normal splenic volume measured with Spect. *Eur J Nucl Med*, 1997, 22, 851.

Otto AC, Pretorius PH, Dunn M, Nel MG, Van Aswegen A, Marais J, Lötter MG. Determination of GFR with radionuclide renography and direct urinary activity quantitation. *Eur J Nucl Med*, 1997, 22, 855.

Gert G, Lötter MG, van Aswegen A, Naudé H, Otto AC (1996). Glomerular filtration rate determination with in vivo urine activity measurement with a scintillation camera. *Physica Medica*, 1997, 12, 179.

Naudé H., Van Aswegen A., Lötter M.G., Du Toit P.D., Pretorius P.H., Herbst C.P. Implementation of a scanning line source (Tc-99 & Ce-139) for attenuation correction in SPECT using a dual opposing head scintillation camera. *Medical & Biological Engineering & Computing*. 1997, 35, supplement part 2: 807.

Lötter M.G., Van Aswegen A. Training and registration in medical physics in South Africa. *Medical & Biological Engineering & Computing*. 1997, 35, supplement part 2: 1238.

Naudé H., Van Aswegen A., Lötter M.G., Pretorius P.H., Du Toit P.D., Herbst C.P. Implementation of a scanning line source (Tc-99 & Ce-139) for attenuation correction in SPECT using a dual opposing head scintillation camera. *Journal of Nuclear Medicine*, 1997, 38 (5): 217.

Gert G., Naudé H., Lötter M.G., Van Aswegen A., Otto A.C., Dunn M. Glomerular filtration rate determination with in vivo urine activity measurement with a scintillation camera. *Journal of Nuclear Medicine*, 1997 38 (5): 295.

## 2.3 Populêr-wetenskaplike publikasies

Sweetlove A., Herbst C.P., Markgraaff C. Identification of mammography image artefact: a random assortment of low density blemishes. *South African Journal of Radiology*, 1997, 2 (1): 10 – 11.

Markgraaf C., Sweetlove A. Letter to the editor: Whither breast imaging in SA. *South African Journal of Radiology*, 1997, 2(2): 34-35.

## 2.4 Kongresverrigtinge

1. Uys N.J., Herbst C.P., Lötter M.G., De Villiers J.F.K., Van Zyl M. Evaluation of a numerical observer to determine the influence of JPEG data compression on the diagnostic quality of computed tomography images. Youngmin Kim (ed). *Proceedings of SPIE: Medical Imaging 1997, New Port Beach, USA*. 1997, 738 – 748.

## 2.5 Internasionale Voordragte

Naudé H., Van Aswegen A., Lötter M.G., Du Toit P.D., Pretorius P.H., Herbst C.P. Implementation of a scanning line source (Tc-99 & Ce-139) for attenuation correction in SPECT using a dual opposing head scintillation camera. World Congress on Medical Physics and Biomedical Engineering, Nice, France, Sept 1997.

Lötter M.G., Van Aswegen A. Training and registration in medical physics in South Africa. World Congress on Medical Physics and Biomedical Engineering, Nice, France, Sept 1997.

Naude H., Van Aswegen, A., Lötter M.G., Pretorius P.H., Du Toit P.D., Herbst C.P. Implementation of a scanning line source (Tc-99m & Ce-139) for attenuation correction in SPECT using a dual opposing head scintillation camera. 44th Annual Meeting of the Society of Nuclear Medicine, San Antonio, Texas, USA 1997

Gert G., Naudé H., Lötter M.G., Van Aswegen A., Otto A.C., Dunn M. Glomerular filtration rate determination with in vivo urine activity measurement with a scintillation camera. 44th Annual Meeting of the Society of Nuclear Medicine, San Antonio, Texas, USA, 1997.

## 2.6 Nasionale Voordragte

Lötter MG: Minimum requirements for training and registration of medical Physicists. 37 Annual SAAPMB Congres, Kaapstad 1997

Lötter, MG: Training and registration in Medical Physics. 37 Annual SAAPMB Congres, Kaapstad 1997

Du Plessis FCP, Willemse CA, Lötter MG. The conversion of CT data for use in the Monte Carlo program DOSXYZ. 37 Annual SAAPMB Congres, Kaapstad 1997

Naude H, Van Aswegen A, Lötter MG, Du Toit PD, Pretorius PH, Herbst CP. Implementation of a scanning line source (Tc-99m & Ce-139) for attenuation correction in Spect using a dual opposing head scintillation camera. 37 Annual SAAPMB Congres, Kaapstad 1997

Marais J, A van Aswegen, Jansen SE, Otto AC, Lötter MG, Dunn M. A Comparison of glomerular filtration rate values determined using three radionuclide techniques in Healthy volunteers. 37 Annual SAAPMB Congres, Kaapstad 1997

Gert G, Lötter, Van Aswegen A, Naude H, Otto AC. Glomerular filtration rate determination with in vivo urine activity measurement with a scintillation camera. 37 Annual SAAPMB Congres, Kaapstad 1997

Willemse CA, G Gert: Calibration of electron beams for arc therapy. 37 Annual SAAPMB Congres, Kaapstad 1997

## 2.7 Plaaslike voordragte

Du Plessis FCP, Willemse CA, Lötter MG. 'n Metode om weefsel samestelling, soos benodig vir Monte Carlo dosisberekening, af te lei uit rekenaar tomografiese beelde. Fakulteitsforum 1997.

Beeslaar F, Sweetlove MA, Herbst C, Lötter MG, van der Walt K, Duvenage J. Evaluering van 'n fotodiode wat as optiese digtheidsmeter gebruik word. Fakulteitsforum 1997.

Willemse CA, Gert G. Calibration of electron beams for ARC therapy. Faculty Forum 1997.

Marais J, van Aswegen A, Jansen SE, Otto AC, Lötter MG, Dunn M. Die bepaling van verwysingswaardes van glomerulêre filtrasietyempo met drie radionuklied tegnieke. Fakulteitsforum 1997.

### 3. Toekennings

Die Departement Geneeskundige Fisika het 'n suksesvolle jaar op al die vlakke van betrokkenheid beleef. 'n Skoliergroep van die Hoërskool Sentraal het in samewerking met Frikkie Beeslaar en Ann Sweetlove 'n goue medalje by die Expo in Pretoria asook die prys vir die beste projek in Stralingsveiligheid verower.

Mnr. Godfree Gert het die Raad se Aansporingsprys by die kongres van die Suid-Afrikaanse Vereniging vir Fisici in Geneeskunde en Biologie verower met die referaat "Die bepaling van Glomerulêre filtrasietyempo". Met hierdie metode is 'n bydrae gelewer deur van beelding gebruik te maak en die gebruik van urine monsters uit te skakel.

'n Publikasie van Dr. William Rae, Casper Willemse en Prof MG Lötter is aangewys as die beste publikasie in die Laboratorium groep van die Fakulteit Gesondheidswetenskappe.

### 4. Gemeenskapsdiens

Ons is trots op die volgende lede van die departement wat dien op 'n aantal rade en komitees buite die departement:

#### Prof. MG Lötter:

Voorsitter: SAGTR Beroepsraad vir die Mediese Wetenskap

Voorsitter: Subkomitee vir Registrasie Regulasies, SAGTR Beroepsraad vir die Mediese Wetenskap.

Lid Instituut Lewenswetenskappe, Pretoria

Lid Uitvoerende Komitee, SA Mediese Fisika Vereniging

#### Prof. A van Aswegen:

Lid: Suid Afrikaanse Vereniging vir Fisici in Geneeskunde en Biologie

Sekretaris: SA Vereniging vir Kerngeneeskunde

Voorsitter: IOMP Developing Countries Committee

American Association for Physicists in Medicine: SPECT task group.

#### Prof. CP Herbst:

Beoordelaar Expo - Jong Wetenskaplikes

Raadslid: Suid Afrikaanse Vereniging vir Fisici in Geneeskunde en Biologie

Lid: Departementele Inligting Tegnologie Komitee - Departement van Gesondheid.

Lid: Inligting Tegnologie Subkomitee van die kantoor van die Premier

Lid: Evalueringskomitee vir Welsynstender vir die Vrystaat

Lid: Evalueringskomitee vir Netwerktender vir die Departement van Gesondheid in die Vrystaat

Lid: Evalueringskomitee vir Nasionale Gesondheid Inligtingstender.

### 5. Personeelaangeleenthede

Hennie Smit het ons verlaat in die afgelope jaar en hom aangesluit by die personeel van die Vrystaatse Technikon. Hennie Pretorius en sy gesin het hulle in Amerika gaan vestig.

## **MEDUNSA, Garankuwa: Mr Alan Chamberlain**

This has been quite a hectic year. The Department was selected as one of three departments at Medunsa to take part in the FRD's Institutional Research Development Programme. This took the form of a grant for one doctoral student, two master's students and two honour's students. An amount was also given for running costs. Prof. Strydom is the grant holder.

Staying with research, the Department is currently involved in a number of projects, namely:

- Digitising of images, sound and Video for presentation in computer-based lessons. Leader/Supervisor: Mr O R van Reenen.
- Estimation of normal and ischaemic lv myocardial mass. Leader: Mr A J White; Supervisor: Prof W J Strydom.
- Estimation of normal and ischaemic lv myocardial mass for idiopathic congestive myopathy. Leader: Mr A J White; Supervisor: Prof W J Strydom.
- Improved software processing of myocardial data in MIBI tomographic reconstruction. Leader: Mr A J White; Supervisor: Prof W J Strydom.
- On-line digital manipulation of ultrasound images with a personal computer. Leader: Mr G J J Korf; Supervisor: Prof W J Strydom.
- A study to examine the radioisotope distribution of locally produced tobacco to commercially available tobacco. Leader: Mr A C Chamberlain; Supervisor: Prof W J Strydom.
- Radiation dosimetry of craniopagus twins during Tc<sup>99m</sup>-DTPA and Tc<sup>99m</sup>-HMPAO studies. Leader Mr A C Chamberlain; Supervisor Prof. RF Clauss

The papers below were published last year:

- Chamberlain AC, Strydom WJ. A computerized implementation of a non-linear equation to predict barrier shielding requirements: Health Physics, Vol 72(4), 568-573
- Clauss RP, White AJ, Pilloy W, A one hour rest-stress technetium-99m MIBI myocardial protocol, Physica Medica, vol 13(3), pp 143-6, 1997
- White AJ, Dicker E, Projected area model for calculating the geometric PSF of a parallel hole collimator: Physica Medica, vol 13(4),1997

A number of posters were presented at the SAAPMB Congress. These were:

- Chamberlain AC, Strydom WJ, Dormehl IC – Use of a simple compartmental analysis model for dose calculations in baboons. Annual congress of the Association of Physicists in Medicine and Biology – Cape Town.
- Chamberlain AC, Strydom WJ – A simple program to calculate doses for irregular fields. Annual congress of the association of Physicists in Medicine and Biology – Cape Town.
- Korf GJJ, Stefan V, Strydom WJ – A study to investigate the possibility of three-dimensional ultrasonic display in obstetrics using inexpensive hardware

and software. Annual congress of the Association of Physicists in Medicine and Biology – Cape Town.

Erhardt Korf won the SAAPMB's award for the poster covering the most commendable research. Prof. Strydom and Erhardt also attended the World Congress of Medical Physics and Biomedical Engineering in Nice, France where the second two posters were presented. A summary of the World Congress as experienced by Erhardt is attached.

Erhardt was also elected as the secretary/treasurer of the SAMPS. He joins the committee with Prof. Strydom who was elected chairman. While on the subject of appointments, Prof. Strydom and Frank Daniels served on the Professional Board of Medical Science of the Interim Medical and Dental Council. Prof. Strydom has also been elected to represent the Northern Transvaal during the inter-provincial veterans tennis tournament in East London. Frank Daniels was appointed as TELP co-ordinator for Medunsa. Frank was also selected to attend the IAEA regional training course on Clinical and Physical Aspects of Quality Assurance in Radiation Oncology in Accra, Ghana.

The Department subscribes to a number of journals through the Medunsa library, namely:

Acta Oncologica  
Applied Radiation and Isotopes  
Applied Radiology  
British Journal of Radiology  
Canadian Journal of Medical Radiation Technology  
Clinical Nuclear Medicine  
Clinical Radiology  
Current problems in Diagnostic Radiology  
Diagnostic Imaging: News magazine of Radiology  
European Journal of Nuclear Medicine  
Health Physics  
IEEE Transactions on Biomedical Engineering  
Journal of Clinical Engineering  
Journal of Clinical Forensic Medicine  
Journal of Computer Assisted Tomography  
Journal of Medical Engineering and Technology  
Journal of Nuclear Medicine  
Journal of Nuclear Medicine Technology  
Medical Engineering and Physics  
Medical Physics  
Nuclear Geophysics  
Nuclear Medicine and Biology  
Nuclear Medicine Communication  
Nuclear Medizin  
Nuclear Tracks and Radiation Measurement  
Physics Education  
Physics in Medicine and Biology  
Physiological Measurement

Radiation Physics and Chemistry  
Radiation Protection Dosimetry  
Radiographer  
Radiography Today  
Radiologic Clinics of North America  
Radiologic Technology  
Radiology  
Seminars in Nuclear Medicine  
Seminars in Roentgenology  
Seminars in Ultrasound, CT and MRI  
South African Radiographer

Papers in these journals may be obtained via an interlibrary loan.

Academically, it was a heavy year with over 500 students enrolled for the various courses offered by the Department. In particular our honour's course has seen unprecedented growth with the arrival of four more students to join Samuel Bakhane. We would like to welcome Samuel Thema and Tsepo Mhlongo from Vista University, and Steven Tshifhiwa Maage and Vincent Humbulani Maselesele from Venda University who have taken a part-time posts in addition to the honours course. Ndanganeni Mandiwana is busy finishing off his master's degree and finalising his registration as a medical physicist.

On the service scene, the Department was responsible for drawing up and evaluating a number of specifications for CT, trauma, mammography and dental X-ray machines for the Northern Province. Prof. Strydom was asked to referee the book Radiation Therapy Physics, second edition, by WR Hendee and G S Ibbott for the journal, Physics in Medicine and Biology. The Department was requested to assist the Radiation Oncology Department of Hillbrow Hospital by rendering medical physics services for them twice a week. This resulted from the acute shortage of staff currently experienced in Johannesburg. Alan Chamberlain and Erhardt Korf serve on Mondays while Mari Jordaan and Frank Daniels attend on Wednesdays. Samuel Bakhane, one of our trainee medical physicists, joins them on Mondays to gain exposure to the practical aspects of Radiotherapy.

Locally, we said farewell to Elza Gericke our bio-engineer who took up a post at the CSIR. Our web site has been transferred to a new server. It can now be found at <http://whocc.medphys.medunsa.ac.za/medphys/>. Erhardt Korf is busy working on the SAMPS site that will probably also go on this server.

We wish you all a productive year and hope to see you at the congress.

Regards

Alan Chamberlain

**HILLBROW HOSPITAL, Johannesburg: Dr M J Scott**

This has been a difficult year in that all of Hillbrow Hospital has closed as an inpatient facility. Casualty, Out-patients, Medical Physics and Radiation Oncology remain open. The Radiation Oncology Clinics and ward are now at the Johannesburg Hospital so that the Radiation Oncologists move back and forth from one hospital to the other. This leads to difficulties from time to time.

It is intended that Radiation Oncology will move to the Johannesburg Hospital in due course. The bunkers will be built, new machines ordered and calibrated, and then Radiation Oncology at Hillbrow will be closed and Medical Physics will move to the Johannesburg Hospital as well. Some people seem to talk of a time frame of 18 months, others three or five years.

Pierre Kibasomba has registered as a trainee Medical Physicist.

Several of our number have left for other places.

- Maria Mikosova has returned to Czechoslovakia to join her two children
- Zakithi Msimang has resigned to go to the CSIR with better salary.
- Kwaku Nani has returned to Ghana to work with the radiation Oncologists there.

Recently, we were joined by several physicists from Medunsa who have been helping us. Alan Chamberlain and Erhardt Korf come on Mondays and Mari Jordaan and Frank Daniels come on Wednesdays. This has been of considerable assistance and we thank them for their contribution.

Mary Jean Scott has recovered extremely well from her total hip replacement early in 1997. However, she has reached obligatory retirement age and therefore must retire, although it is intended that she continue in full time employment. She was awarded a BTh(Hons) degree in Theological Ethics by UNISA last year.

Her name has been included in the following publications

- Who's Who in the World
- Who's Who in Science
- Dictionary of International Biography
- The World Who's Who of Women
- Who's Who in Medicine and Healthcare:
- American Biographical Institute: Five Thousand Personalities of the World

Professor Rex Keddy is presently on leave following an operation so that Mary Jean Scott is writing this newsletter.

Dr Mary Jean Scott

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**TYGERBERG HOSPITAL, Belville: Dr W Groenewald**

1. Current research/development topics.

1. Design of tissue compensating filters milled by an automatic compensator cutter.
2. Dosimetry for Photo Dynamic Therapy of superficial head and neck tumours.

## 2. General News.

- Rudolf Kabutz left Medical Physics at the end of last year. He is attending bible school this year. Next year he will be joining the Trans World Radio team.

Mr D Walelign from Ethiopia is spending a 12 months training period at Tygerberg Hospital. Mr Walelign has an M.Sc. from Addis Ababa University and holds a fellowship from the IAEA for training in Nuclear Medicine Physics.

### **GROOTE SCHUUR HOSPITAL, Cape Town: Mr Graeme Lazarus**

In the past year, our Department has seen a reduction of 44% in the number of Medical Physicists.

**Dr Magdel Sheckleton**, the Head of Department, opted for the voluntary severance package, and has joined the exciting world of private Medical Physics.

**Ms Suzanne Coetzee** is getting married on 7<sup>th</sup> March and is moving to Australia (sorry guys!). She has been misguided into believing that jet-setting accountants are more exciting than Medical Physicists. HA!!

**Mr Alan Muller** also resigned last year and is now working at the Koeberg Power Station, situated in the outskirts of Cape Town.

**Mr Bheki Buthelezi** successfully completed his Honours Degree in Medical Physics and spent 1997 as a physicist in training. He is now reading for an MBChB degree at the University of Cape Town. He insisted that I mention that he had a girlfriend in October last year. Unfortunately, the relationship lasted only 3 weeks – he is hoping to be more successful with the young, impressionable medical students. Good thinking, Bheki!

We wish all those mentioned above the best of luck in their new environments. We are absolutely sure that they will miss us terribly!

**Dr Egbert R Hering** is now the Acting Head of Department. We offer him our continued support in these trying times of staff shortages. He has been elected as Council Member and Treasurer of the SAAPMB, as well as Chairperson of the South African Radiobiology Society.

**Mr Jan K Hough** has successfully completed the commissioning of our new Theraplan Plus Windows NT Planning system. He has succeeded in setting up our

departmental web site (address below) and blames this task for not completing the writing-up of his MSc thesis. He is participating in the 105km Argus Cycle tour \* grin \* to be held on 8<sup>th</sup> March, and hopes to reach home in time to watch the 8pm sports round-up on M-net. Good luck, Jan – we'll tape it for you!

**Mr Graeme Lazarus** (yours truly) is planning to attend the 'Radiation Transport Calculations using the EGS4 code system' course in Teddington, UK in June. I hope this will speed up progress towards completion of my MSc. Any donations will be most welcome! Since I am making an overseas trip this year, I intend wearing out my old pair of shoes and am leaving my office in it's present state!

**Ms Suzanne Coetzee** spent a 3 month sabbatical in Townsville, Australia where she assisted in the setting up of an afterloading facility. It is there that she met her South-African born husband-to-be.

**Mr Cameron Challens** – well, what can one say about Cameron!

**Mrs Nicolene Coetzee** (nee Gentle) got married last December \* sigh \*. She is currently setting up her new home and is also busy writing up her MSc thesis.

**Mr John Bengu** successfully completed his Honours training in Medical Physics. Congratulations John! He is currently a Physicist-in-Training in our department, but unfortunately does not have a post. We admire his dedication to the profession and hope that a position will be unfrozen soon in order to accommodate him.

**Mrs Cheryl Johnson**, a technologist in our department, has been promoted to Chief Radiographer. She has also become a new home owner – congratulations on both counts, Cheryl.

**Mrs Ruth Knowles** from our mould-room was promoted to Chief Medical Technical Officer. She was invited, on behalf of the International Atomic Energy Agency, to attend the 'Advisory Group meeting on Standards to Develop Efficient Radiotherapy Devices' held last year in Vienna.

## **RESEARCH**

**Mrs Penny Engel-Hills** has completed writing up her MSc thesis for which she registered through our department. It was entitled 'Investigation of the Barium Enema X-Ray examination as a Significant Contributor to the Genetically Significant Dose from Diagnostic Radiology'.

The **LODOX** project with de Beers is going strongly ahead with the first commercial prototype probably going to be installed at Groote Schuur Hospital later this year.

**Mr Gerrie Marais**, a past PhD student in our department, has been notified of the acceptance of his work, on the 'Genetically Significant Dose for the South African Population', for publication by 'Health Physics'.

**Mr Jan Hough** – MSc thesis: 'Patient Positioning in Proton Therapy'.

**Mr Graeme Lazarus** – MSc thesis: 'Evaluation of Doses in close proximity to Iodine-125 Sources using Monte Carlo Techniques'.

**Mrs Nicolene Coetzee** – MSc thesis: 'The Diagnostic, Social and Economic benefits of Low Dose Radiology using recently developed Technology'.

## **MISCELLANEOUS**

Mr A M Mwangolombe of the Ocean Road Cancer Institute in Dar es Salaam (Tanzania) will visit our department on a fact-finding mission in April this year.

Our Departmental web-site address is: <http://med121.med.uct.ac.za/Medphys.html> C U THERE!

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### **NATIONAL ACCELERATOR CENTRE, Faure: Dr Dan Jones**

In spite of some financial constraints the NAC's Medical Radiation Group continues to flourish, while the number of neutron and proton therapy patients remains approximately constant. The new treatment schedule allows four proton fractions per week and 3 neutron fractions per week (2 at night).

The staff complement increased during 1997 with the employment of 2 additional Radiographers and a Clinical Trials Data Co-Ordinator (also a Radiographer). Four Research Fellows (2 Physicists and 2 Radiation Oncologists) joined the Group in early 1998. The staff now consists of 5 Physicists, 2 Research Fellows (Physicists), 2 Research Fellows (Radiation Oncologists), 6 Technicians, 5 Radiographers and 1 Secretary. It is expected that another Planning Radiographer will be appointed shortly. In addition two full-time students are currently employed. It is expected that about ten MSc and PhD students will be involved in research projects on the hadron therapy facilities during 1998.

The Group has been split in two divisions, viz. Treatment and Research Division, directly under D Jones (Group Head) and Operations and Development Division, under N Schreuder.

Two eminent radiotherapists, Dr John Munzenrider (Massachusetts General Hospital, Boston) and Prof André Wambersie (Cliniques St. Luc, Brussels) spent short sabbatical periods with the Group and provided valuable input to the clinical programme.

The installation of a unique multiblade trimmer on the existing neutron therapy collimator has vastly improved the potential of neutron therapy and also makes patient set up much simpler.

A final decision was made to design and construct 2 additional fixed proton therapy beamlines in the empty vault: one horizontal line and one inclined at an angle of 30° to the vertical. Spot scanning will be implemented on both lines. Work has already begun and the new facilities should be operational in 2001. An industrial robot has been purchased for the patient support system. N Schreuder is project leader.

The ICRU Report Committee on "Nuclear Data for Fast Neutron and Proton Radiotherapy and for Radiation Protection" met at NAC during October (D Jones is a member of the Committee). A combined meeting of the Proton Therapy Co-Operative Group, the European Hadron Therapy Group and the European Clinical Heavy Particle Dosimetry Group will be hosted by the Medical Radiation Group in April 1999.

D Jones is involved in the following international activities:

- Advisor: Egyptian Cyclotron Project
- Consultant: Ministry of Health of Slovak Republic (Cyclotron Project).
- Co-Ordinator for Asia and Africa: European Heavy Particle Dosimetry Group.
- Member: Steering Committee - Proton Therapy Co-Operative Group.

- Evaluator: Neutron therapy programme, Université Catholique de Louvain (Belgium).
- Consultant: ICRU Report Committee on Proton Dosimetry.
- Member: ICRU Report Committee on Nuclear Data for Fast Neutron and Proton Radiotherapy and for Radiation Protection.
- Member: IAEA Committee on Heavy Charged Particles in Cancer Treatment.
- Member: IAEA/ICRU Committee on Radiation Quality and Radiation Biology in Hadron Therapy.
- Chairman: IAEA Committee on Status of Nuclear Data Needed for Radiotherapy and Activities in Member States.
- Member: IAEA/WHO Committee on the The Value of Hadron Therapy in the Health System.
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D Jones and N Schreuder are both holders of IAEA Research Contracts. Members of the Group authored 10 published papers during 1997, while a further 5 are in press. D Jones presented 3 invited papers while staff of the Group contributed 13 other papers at international conferences.

**VISIT OUR WEBSITE:** <http://www.nac.ac.za/~medrad>

#### **PAPERS PUBLISHED (1997)**

1. P J Binns, J H Hough and B R S Simpson. Neutron fluence measurements with a liquid scintillator. *Radiat. Prot. Dosim* **70** (1997) 247-250.
2. P J Binns and J H Hough. Secondary dose exposures during 200 MeV proton therapy. *Radiat. Prot. Dosim.* **70** (1997) 441-444.
3. F D Brooks\*, D T L Jones, C C Bowley\*, J E Symons, A Buffler\* and M S Allie\*. Energy spectra in the 200 MeV NAC proton therapy beam. *Radiat. Prot. Dosim.* **70** (1997) 477-480.
4. J Gueulette\*, B M DeCoster\*, V Gregoire\*, P Scalliet\*, A Wambersie\*, J P Slabbert, L Böhm\*, P J Binns, E A de Kock, A N Schreuder, J E Symons and D T L Jones. RBE of the 200 MeV Proton Beam Produced at the National Accelerator Centre of Faure (RSA) for Late Lung Tolerance in Mice after Single and Fractionated Irradiation (Preliminary Results). (*Advances in Hadrontherapy*, Eds. U Amaldi, B Larsson and Y Lemoigne, 1997, pp 413-419, Elsevier BV, Amsterdam)
5. D T L Jones, A N Schreuder, J E Symons and P J Binns. Experimental investigations of a multiblade trimmer for neutron therapy. *J. Brachyther. Int'l.* **13** (1997) 59-66.
6. M A Ross\*, P M Deluca Jr\*, D T L Jones, A Lennox\* and R Maughan\*. Calculated fluence spectra at fast neutron therapy facilities. *Radiat. Prot. Dosim.* **70** (1997) 481-484.
7. N Schreuder, D T L Jones and J E Symons. The quality control program for NAC neutron therapy facility. *Advances in Hadrontherapy*, Eds. U Amaldi, B Larsson and Y Lemoigne, Elsevier BV, Amsterdam (1997) pp 223-229.
8. A N Schreuder, D T L Jones, J E Symons, E A de Kock, F J A Vernimmen\*, J Wilson\*, L P Adams\* and J K Hough\*. Three years' experience with the NAC proton therapy patient positioning system. *Advances in Hadrontherapy*, Eds. U Amaldi, B Larsson and Y Lemoigne, Elsevier BV, Amsterdam (1997) pp 251-258.

9. A N Schreuder, D T L Jones and A Kiefer. A small ionization chamber for dose distribution measurements in a clinical proton beam. *Advances in Hadrontherapy*, Eds. U Amaldi, B Larsson and Y Lemoigne, Elsevier BV, Amsterdam (1997) pp 284-289.
10. C Stannard\*, J Freislich\*, J Hough\* and J Symons. Palatal salivary gland tumours treated with neutron therapy: should the bite block be built up to reduce the air gap? *Advances in Hadrontherapy*, Eds. U Amaldi, B Larsson and Y Lemoigne, Elsevier BV, Amsterdam (1997) pp 111-119.

### **PAPERS IN PRESS**

1. D T L Jones and S J Mills. The South African National Accelerator Centre: Particle therapy and isotope production programmes. (*Rad. Phys. Chem.*)
2. A N Schreuder, D T L Jones, J E Symons, E A de Kock, J K Hough\*, J Wilson\*, F Vernimmen\*, W Schlegel\*, E H Höss\* and M Lee\*. The NAC proton treatment planning system. (*Strahlenther. Onkol.*)
3. D T L Jones, A N Schreuder, J E Symons, E A de Kock, F J A Vernimmen\*, C E Stannard\*, J Wilson\* and G Schmitt. Status report of NAC particle therapy programme. (*Strahlenther. Onkol.*)
4. M B Chadwick\*, D T L Jones, H H Barschall\*, R S Caswell\*, P M DeLuca Jr.\*, J-P Meulders\*, A Wambersie\*, P G Young\*, G M Hale\* and J V Siebers\*. Nuclear data for radiotherapy: ICRU and IAEA Initiatives. (*Strahlenther. Onkol.*)
5. F J Vernimmen\*, J Wilson\*, C E Stannard\*, D T L Jones, A N Schreuder, E A de Kock and J E Symons. Stereotactical hypofractionated proton therapy for meningiomas near the base of the skull. (*Strahlenther. Onkol.*)

### **INVITED PAPERS AT INTERNATIONAL CONFERENCES (1997)**

#### ***7th International Symposium on Radiation Physics, Jaipur, India, 24-28 February 1997***

D T L Jones and S J Mills, *The South African National Accelerator Centre: Particle therapy and isotope production programmes.*

#### ***2nd Egyptian-Russian School and Workshop on Cyclotrons and Applications, Cairo, Egypt, 15-19 March 1997***

D T L Jones and J P Slabbert, *Accelerator-based neutron capture therapy.*

#### ***World Congress on Medical Physics and Biomedical Engineering, Nice, France, 14-19 September, 1997***

D T L Jones and M B Chadwick\*, *Nuclear data for fast neutron and proton therapy and for radiation protection.*

### **CONTRIBUTED PAPERS AT INTERNATIONAL CONFERENCES (1997)**

#### ***2nd Egyptian-Russian School and Workshop on Cyclotrons and Applications, Cairo, Egypt, 15-19 March 1997***

D T L Jones, *Monoenergetic neutron sources below 100 MeV.*

D T L Jones, F D Brooks\*, J E Symons, A Buffler\*, M S Allie\*, M R Nchodu\*, C C Bowley\* and M J Oliver\*, *Fluence spectra in particle therapy beams.*

D T L Jones, A N Schreuder, J E Symons and P J Binns, *The gamma dose component in a p(66)/Be neutron therapy beam.*

***2nd Research Co-ordination Meeting of IAEA Program on Application of Heavy Charged Particles in Cancer Radiotherapy, Chiba, Japan, 20-21 November 1997.***

D T L Jones, J V Siebers\*, F D Brooks\*, J E Symons, M S Allie\*, A Buffler\* and P J Binns, *Advances in proton therapy beam spectrometry.*

A N Schreuder, D T L Jones, J E Symons, E A de Kock, F J A Vernimmen\*, J Wilson\*, J K Hough\* and L P Adams\*, *Improvements in a stereophotogrammetric patient positioning system for proton therapy.*

***XXVI Meeting of Proton Therapy Co-operative Group, Boston, USA, 29 April – 2 May 1997***

J Gueulette\*, D T L Jones and D Miller\*, *Proton RBE for intestinal crypt regeneration.*

D T L Jones and M B Chadwick\*, *Nuclear Data for Radiotherapy: ICRU and IAEA initiatives.*

D T L Jones, A N Schreuder, J E Symons, E A de Kock, F J A Vernimmen\*, C Stannard\*, J Wilson\* and G Schmitt, *Status report on the NAC particle therapy programme.*

***European Hadron Therapy Group/1st Med-AUSTRON Conference, Innsbruck, Austria, 8-11 October 1997***

D T L Jones and M B Chadwick\*, *Nuclear data for radiotherapy: ICRU and IAEA initiatives*

D T L Jones, A N Schreuder, J E Symons, E A de Kock, F J Vernimmen\*, C Stannard\*, J Wilson\* and G Schmitt, *Status report of NAC particle therapy programme.*

A N Schreuder, D T L Jones, J E Symons, E A De Kock, J K Hough\*, J Wilson\*, F Vernimmen\*, W Schlegel\*, E H Höss\* and M Lee\*. *The NAC proton treatment planning system.*

F J Vernimmen\*, J Wilson\*, C Stannard\*, D T L Jones, A N Schreuder, E A de Kock and J E Symons. *Stereotactical hypofractionated proton therapy for meningiomas near the base of the skull.*

***XXV VII Meeting of Proton Co-Operative Group, Chiba, Japan, 17 – 19 November 1997***

A N Schreuder, D T L Jones, E A de Kock and J E Symons, *The non-orthogonal fixed-beam arrangement for the second proton therapy facility at the NAC*

**\* NOT NAC STAFF MEMBER**

**DTL Jones**

**Head: Medical Radiation Group**

Attached to this newsletter is the current SAMPS document [CODE FOR THE SCOPE OF THE PROFESSION OF THE MEDICAL PHYSICIST](#). This is for your information and perusal. Please note any comments you may have for the AGM at the meeting in May 1998.

**Please do not forget about the offer to publish Afrikaans research article in the Netherlands Journal Klinische Fysica. Instructions to authors and**

**correspondence details are available from Prof. A van Aswegen at Universitas Hospital or from Mr E Korf at Medunsa.**

**Thank you to all contributors of this newsletter!!**

**VERSLAG VAN VOORSITTER: 1997/98**  
**CHAIRMAN'S REPORT: 1997/98**  
**PROF W J STRYDOM**

**1. EXECUTIVE COMMITTEE:**

Chairman: Prof W J Strydom  
Secretary/Treasurer: Mr G J J Korf  
Members: Prof M G Lötter  
Prof A van Aswegen (previous chairman)

The executive committee met on three occasions.

**2. MEMBERSHIP:**

The current membership of the SAMPS is 69 members and 22 associate members.

**3. PROFESSIONELE KOMITEE:**

Prof Lötter is die sameroeper van die komitee. Die Kode vir Beroepsoms Krywing (Code of Practice) is gefinaliseer en die dokument sal behandel word tydens die algemene vergadering.

Die dokumente van die SABS wat handel oor die mediese gebruik van ioniserende strale, moet aangepas word om tred te hou met nuwe eenhede en veranderde regulasies. Die professionele komitee gee aandag daaraan.

**4. PUBLICITY COMMITTEE:**

Dr Debbie van der Merwe is the SAMPS representative on the SAAPMB Publicity Committee. She was responsible for the Newsletter that was published and I want to thank her for her efforts in this regard.

A newsletter was issued just prior to the last SAAPMB Congress. A new revised newsletter can be anticipated for the next issue, which will hopefully contain a wider spectrum of news and be of more specific interest to those active in the Profession. The Public Relations Committee is presently participating in the updating of several official Society documents and other general professional material which will be made available to the general public.

**5. BEROEPSRAAD VIR MEDIESE WETENSKAPPE:**

Tydens die afgelope termyn is daar inspeksies uitgevoer by twee opleidingsentra naamlik Universiteit van Kaapstad/Grootte Schuur hospitaal en Universiteit van Stellenbosch/Tygerberg hospitaal. Die inspeksies is gedoen deur myself en Dr W Rae. Die beroepsraad vir Mediese Wetenskappe het sy laaste vergadering gehad op Vrydag 30 Januarie 1998. Die Mediese Fisici sal in die toekoms ingedeel word by die nuwe Mediese en Tandheelkundige Beroepsraad, wat een van die twaalf hergestruktureerde beroepsrade sal wees.

‘n Saak wat baie aandag geniet by die Mediese en Tandheelkundige Raad is die van voortgesette professionele ontwikkeling van geregistreerde gesondheidswerkers. Die vereniging sal ook ‘n belangrike bydrae moet maak in hierdie verband.

#### 6. PAS FOR MEDICAL PHYSICISTS:

During the last few years our profession lost the services of a number of Medical Physicists. The executive committee is alarmed about the situation because a number of them left the profession for better salaries to the private sector and to parastatal institutions. The heads of the three Medical Physics departments in Gauteng submitted a joint document with proposals to improve the situation to the Health authority of the Gauteng Province.

The executive committee will also continue to investigate other means to address the problems.

#### 7. IOMP:

The 11<sup>th</sup> International Congress of Medical Physics and the 17<sup>th</sup> International Congress of Biomedical Engineering was held in Nice, France, from 14-19 September 1997.

The following members of SAMPS attended the congress:

Prof A van Aswegen  
Prof W J Strydom  
Dr D Jones  
Mrs A Sweetlove  
Mr G J J Korf.

The next congress is the World Congress 2000 to be held in Chicago and information is available on the internet at website: <http://www.wc2000.org>.

#### 8. IAEA / AFRA

In 1990 an inter-governmental African Regional Cooperative Agreement for research development and training related to nuclear science and technology (AFRA) was signed by 23 African countries.

In February 1998 an ad hoc committee met to draw up proposals for the establishing of "A technical auditing team for Radiotherapy centres in Afra member states". The committee consists of :

M. Maksoudi (AFRA Project Co-ordinator – IAEA)  
Prof. B.K. Gueddai (Consultant of improvement of clinical Radiotherapy – from Morocco)  
Mr. S Djeffal (project scientific consultant – from Algeria)  
Prof. R. Keddy  
Prof. W.J Strydom  
Dr C.A. Willemsse (representing prof. Goedhals)

South African Medical Physicists who are to be part of the team, were requested to submit their CV's. A minimum of 10 years in Radiotherapy is required.

#### 9. SAAPMB matters

During this year the executive committee of SARPS (South African Radiation Protection Society) resigned and an independent South African Radiation Protection Association (SARPA) was formed.

The point of view of our executive committee, with current developments and information at hand, is the following :

- We accept the fact that SARPA can act as an independent society representing radiation protection workers in industry.
- SARPS should remain a society within the larger association (SAAPMB) and all health workers involved with radiation protection should be encouraged to join this society.

#### 10. ANDER SAKE:

10.1 Die uitvoerende komitee het deurlopend aandag gegee aan die hele kwessie van besoldiging vir privaat mediese fisika dienste. Onderhandelinge is gevoer met die Mediese Vereniging van Suid-Afrika, sowel as met RAMS. Dit blyk dat 'n nuwe tarief-struktuur ingefaseer word wat deur die Mediese Skemas aanvaar is. Die tarief-struktuur is gebaseer op die CPT sisteem van die Verenigde State.

Die uitvoerende bestuur het 'n brief in dié verband aan die Onkologie Vereniging gerig om die implementering van die nuwe tarief-struktuur so te doen dat Mediese Fisici hul regmatige deel sal kry en dat dit uniform toegepas sal word.

10.2 Die uitvoerende komitee was ook in verbinding met Direkoraat: Gesondheidstechnologie van die Departement van Gesondheid rakende 'n voorstel van die Kerngeneeskunde Vereniging, waaring hulle versoek dat die magtiging vir die gebruik van isotope vir Kerngeneeskundige doeleindes slags deur die Kerngeneeskundige gehou kan word. Die uitvoerende komitee voel sterk dat dit inbreuk maak op die rol van die Mediese Fisikus. 'n Brief in dié verband is gerig aan die Interim Mediese Raad, sowel as die Departement van Gesondheid.

10.3 I would like to use this opportunity to thank the Executive Committee for their contribution and support during this term of office A special word of thanks to the Secretary for the dedication with which he performed his duties.

### **Report on the Professional Board for Medical Science**

**M.G. Lötter, Ph.D.**

**Member of Professional Board for Medical Science**

#### 1. The Health Professions Council of South Africa.

The Professional Board for Medical Science has had its last meeting on 30 January 1998. Medical Physicists will in future register with the new Medical and Dental Professional Board (MDPB). All Medical Scientists will elect one person to that board. Nominations for that position closed on 27 March 1998. Voting for the Board will close on 18 May 1998 and the first meeting of the Board will be in the first half of June 1998.

The Professional Board for medical Science recommended to the new MDPB that a management Committee for Medical Science be established. The composition of the committee will be as follows:

Elected member to the MDPB (chairperson)

One person elected by persons on the following registers:

Medical Physicists

Medical Biological Scientists

Clinical Biochemists

Genetic Counselors.

The MDPB will organise the election of the members when the committee is approved by the MDPB.

## 2. Continued Education

It is an aim of the Health Professions Council to introduce continued education. SAMPS has been requested to start continued education on a voluntary basis until a system has been adopted by MDPB to be implemented for re-registration.

3. The SA Qualifications Authority will be requested to register the Committee for Medical Science as the Standards Regulating Body and Education and Training Quality assurance Body.
4. The training of Medical Physicists at Tygerberg Hospital and Grootte Schuur Hospitals has been evaluated during the year. The centres complied with the standards required for training.
5. A letter was sent to the Department of Public Service requesting that the PAS be reviewed to ensure the retention of Medical Physicists.
6. The rules for registration and minimum requirements for the syllabus, experiential training and institutional facilities as explained at the annual meeting last year were accepted by the Professional Board. Copies of the documents are available from the HPCSA or from myself.

**REPORT ON THE  
WORLD CONGRESS OF  
MEDICAL PHYSICS AND BIOMEDICAL ENGINEERING  
*Nice, French Riviera, 14-19 September 1997*  
Erhardt Korf**

The International Medical Physics and Biomedical Engineering congress held at the Accropolis Convention Center in Nice during September 1997 was HUGE. In the Medical Physics field there were a total of 374 oral presentations and 334 poster presentations. A total number of 1733 presentations were delivered covering the Biomedical Engineering disciplines. To accommodate these 2441 presentations from approximately 2265 participants in five days, 20 parallel oral sessions together with 6

parallel poster sessions were ran daily. Apart from the scientific presentations, 660 exhibitors from 70 manufacturers exhibited their goods in 86 booths.

The congress was officially opened on Sunday September 14 at 16h30 after which a cocktail function was held. The scientific program started the next morning and a few highlights of the week were :

- A talk by Prof. Andreo from the International Atomic Energy Agency on the past, present and future international codes of practise for Radiotherapy Dosimetry.
- A number of presentations on the registration and fusion of multimodality medical images.
- Presentations on ultrasonic Doppler techniques and applications.
- Presentations on new ultrasonic signal processing and imaging modalities.
- A very interesting talk on new radionuclides compared to conventional ones for Brachytherapy
- A number of talks and posters on medical image visualization
- A presentation on the Dicom Conformance Statement
- A number of oral presentations on quality assurance of Radiotherapy equipment
- A very interesting presentation of the first demonstration of 2D-imaging of ultraweak biophoton emission (only approximately 3000 counts/30 min) from rat brain in vivo
- A presentation on radionuclide selection criteria for the treatment of painful metastatic bone disease in humans, in which the author concluded that low-energy electron emitters such as  $^{117m}\text{Sn}$  and  $^{33}\text{P}$  are more likely to deliver a therapeutic dose to the bone while sparing the bone marrow than high energetic beta emitters.
- An oral presentation on stereovision for 3D reconstruction of the left ventricle from echocardiographic images.
- An interesting session on professional development of and international collaboration between Medical Physicists

Apart from above mentioned presentations, two invited lectures were very special. The one lecture was given by Prof. JR Cunningham from Canada who wrote one of the textbooks commonly referred to in Radiotherapy and which I personally used extensively during my training to become a Medical Physicist. The other special lecture was given by Dr. Helene Langevin-Joliot on the title of "Hundred years of radioactivity". The interesting part about this lecture was that it was presented by the grand-daughter of Pierre and Marie Curie who discovered radium in 1898 and the daughter of Frederic and Irene Joliot-Curie who discovered artificial radioactivity in 1934. She herself is an eminent scientist, a specialist in nuclear physics.

The social programme peaked with the Gala function held on Tuesday, September 15, being a medieval evening in Eze Village, approximately halfway between Nice and Monte Carlo in Monaco. I spent and enjoyed the evening in the company of a bioengineer from Mexico and two scientists from Romania.

Due to the very large amount of presentations at such a world congress, one can only absorb a small fraction of all the knowledge conveyed to the participants. Part of the aim of such a world congress is to give people the opportunity to meet peers from across the globe and I have grasp at this opportunity. I have already received a set of

publications on ultrasonic reconstructions from a lecturer in France while email contact was made with a fellow presenter from South Korea. To conclude, attending the World Congress on Medical Physics and Bio-Engineering in France last year was an experience never to be forgotten.