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London and South East Branch reaches for the stars



L&SE Branch Secretary Rizwana Shelley and Lt. Col. Duane Carey.

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"Hey all! Akwaaba!"



Ewa Karczewska & Marta Caballero's Medical Physics Outreach Project in Ghana.
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To Join the Retired Members Section (REMS) Contact John Belling

E-mail john.a.belling.secrems@gmail.com

"Hey all! Akwaaba!

We are Marta Caballero (L&SE Branch committee member) and Ewa Karczewska, two recent Physics and Medical Physics graduates from UCL. Let's first let you all know how we came across the idea of doing this project.....

Our Medical Physics Educational and Outreach Project in Ghana is funded by the Institute of Physics and was inspired by UCL's 'paRTner' initiative, a collaboration between UCL and two cancer centres in Ghana to train radiotherapists in West Africa. The country of Ghana is currently only able to treat a few percent of all patients needing radiotherapy each year, and this is not only due to a lack of trained personnel and equipment, but also low cancer awareness and a general lack of knowledge about Medical Physics and Radiotherapy. A lot of paRTner's efforts are currently focusing on training radiotherapists on site, but we found a need to focus more on educating the general population about the life-saving potential of Radiotherapy. The quality of secondary education in Ghana is low, and several education policy goals focus on improving the quality of teaching Science, in particular Maths and Physics. At a university level, Physics graduates are unaware of opportunities to pursue careers in Medical Physics and Radiotherapy. There is a need to increase the number of students interested in this field. In collaboration with the Ghana Society for Medical Physics, we hope to deliver a series of lectures to secondary school and university students about Physics and future careers in Medical Physics. We will also promote the IOP network and the support it can provide for its members throughout their career development.

After nearly 20 hours flying around the world, we arrived to Accra International Airport at 12 pm on Friday, where Jamal, founder and president of the Dream Africa Care Foundation, was waiting to pick us up. The Dream Africa Care Foundation supports sustainable development initiatives in Ghana, has two orphanages in the country and supports teaching in several primary and secondary schools in Accra. We are staying at a volunteer house outside Accra with 17 other volunteers from the UK, Austria, Spain and the US. They are a great group of young people that are teaching in several local schools, nursing in care centres and hospitals or coaching football teams. Most of them have been in Ghana for over a month, and love the sense of community in the volunteer house and Dream Africa Orphanage. Our new home is simple and relatively clean, has running water (at least most of the time and only if it's rained enough during the week), and everyone is expected to help and contribute with house chores. We've been very lucky to come across this organization! Through meeting them all, we've already gained great insight into the educational and healthcare system in Ghana. Several of us were also taken on an orientation day in Accra yesterday. It was an incredible and very eye-opening first day in the country. We took a tro-tro (local bus) to the city centre, walked around Accra's lively food market, and drove on a motorcycle through one of the city's biggest slum. It was definitely an experience to see how people, vehicles and cattle all share the same space in the city streets. What an overwhelming but unique experience!

We are now working on our presentation for the Ghana Society for Medical Physics tomorrow morning. We will be meeting representatives from the Society and Medical Physics Department at the University of Accra. We are keen to share our ideas with them, but are mostly interested in hearing how they believe we can contribute the most to establish active links with the IOP and UCL's Medical Physics Department. We will keep you all posted!



Akwaaba again!! This is our 6th day in Ghana!

On Monday morning, we took a taxi to the University of Ghana, the oldest and best-known university in the country. The University is in an incredible location up a hill in Legon, about twelve kilometres away from the centre of Accra. Francis, our contact from the Ghana Society for Medical Physics, invited us to meet the Society at the Ghana Atomic Energy Commission, home to the Graduate School of Nuclear and Allied Sciences. The University of Ghana is one of the few universities in Africa offering programmes in Nuclear Physics and Nuclear Engineering, and the only one offering an M. Phil in Medical Physics.

Continued page 5

London and South East Branch reaches for the stars

On Tuesday 10th September the LSE Branch was thrilled to be joined by Air Force Lieutenant Colonel (Retired) Duane "Digger" Carey - former NASA astronaut – who spoke at the London Centre about his exploits piloting the space shuttle sent to repair the Hubble telescope. It was a hugely successful and inspiring event that drew a huge audience to Portland Place.

Duane grew up in St. Paul, Minnesota and by 1981 had earned a commission as a second lieutenant in the United States Air Force. By 1982 he had received a Bachelor of Science degree in Aerospace Engineering and Mechanics and a Master of Science degree in Aerospace Engineering from the University of Minnesota. During his 22 plus years in the Air Force, Digger logged over 1000 flight hours each in the A-10 Thunderbolt II, the F-16 Fighting Falcon, and the T-38 Talon. He served in the U.S., South Korea, Spain, and Turkey. During Operation Desert Storm in 1991, he earned the Distinguished Flying Cross with Valor Device and three Air Medals. He was later selected to attend the United States Air Force Test Pilot School at Edwards Air Force Base, California. After graduation, he tested F-16's, specializing in aircraft performance and flying qualities. He has logged over 4300 hours in over 35 different models of aircraft.

Digger joined NASA's Astronaut Corps in 1996. In 2002, he piloted the Space Shuttle Columbia on mission STS-109, a servicing mission to the Hubble Space Telescope. During his ten-plus days in space, Digger and his crew covered over 3.9 million miles and circled the Earth 165 times. After his space mission, he served in Houston Mission Control as a CAPCOM and was working there the fateful morning of the Columbia Space Shuttle disaster. Digger and his crew were the last ones ever to successfully complete a mission aboard Columbia.

In late 2004, Digger left NASA and the Air Force to embark upon a new life. He and his wife Cheryl are currently engaged in educating young people and other Americans about the importance of America's exploration and research programs. They are inspiring young people to pursue educations and careers in math, science, and other technical fields.

To date, they have reached tens of thousands of people with their message. Almost all of their business travel is performed on motorcycles.



Above: The Careys & Branch Chair Mark Telling

Digger and Cheryl have been featured in multiple Associated Press articles and in several publications including American Motorcyclist, Sport Rider, Red Rider, and Road Trip magazines. One of their goals is to ride their motorcycles around the world.

For more information about Duane and Cheryl and their outreach activities please visit:

<http://www.astronautbiker.com>

**Students
from the
London
Academy of
Excellence**

**Ikh-udval
Gundari &
Jagjit Singh**

meet

**Lt. Col.
Carey
at the branch
lecture.**



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LIYSF Students Visit the University of Kent Laboratories

Outstanding science and engineering students, from 57 countries, attended the London International Youth Science Forum from (LIYSF) 24 July – 7 August, held at Imperial College London. These students, aged 17 – 21 years, attend lectures by international experts, visits to universities, research laboratories and industrial laboratories. In addition there is a social and a recreational programme organized in London.



Above: Dr C Isenberg and LIYSF Students

On Tuesday 30 July 2013 a group of LIYSF students visited the science and electronics laboratories at the University of Kent and attended a lecture-demonstration on chaotic phenomena given by Professor Mohamed Sobhy, (below).



They visited the electronics undergraduate projects laboratory supervised by Mr Harvey Twyman and the Antenna Laboratory in the School of Engineering and Digital Arts under the guidance of Dr Benito Sanz.



Above: Dr Benito Sanz explains research in the Antennae Laboratory.



Above: Students visiting the Undergraduate Projects Laboratory learn about the work undertaken in the first year degree class.



In addition they had a session in which they attempted to solve some mathematical puzzles posed by of Professor John Dore, (above).

They returned to Imperial College at the end of the day determined to visit Canterbury again when they return to the UK.

Akwaaba again!! This is our 6th day in Ghana! Continued from page 2

Meeting the Ghana Society for Medical Physics was a truly unbelievable experience. All our expectations were surpassed. The president of the Society, Prof. Amuasi, warmly welcomed us in one of their conference rooms. Our presentation was followed by a 2-hour Q&A session and an informal chat with nibbles.



What we thought would be a 30-min presentation, became a 4-hour informative session where we learnt from them as much as we hope they did from us. The professors invited ten of their current M. Phil students to attend the talk, and to our surprise, most of their questions regarded the process of becoming an accredited Medical Physicist in the UK and applying for PhDs in the UK. They were eager for us to give them insight into whether we thought their syllabus, resources and way of training students is comparable to the UK equivalent. During our discussions, we developed an action plan for us to support the student's development and the work of the Society:

- Increase the number of Medical Physics journals the department is subscribed to and improve student's access to new online resources.
- Gather information on the international PhD application process and possible sources of funding for Ghanaian Medical Physics students. We will be delivering one more informative session to M.Phil graduates next week.

Upon return to the UK, initiate the process of filming an interactive training video where radiotherapists and specialists are filmed using a LINAC, CT, MRI and SPECT-CT system.

Due to the fact that the radiotherapy unit at the Korle Bu Teaching Hospital in Accra is usually fully booked and treating patients daily, students barely get access to practical experience during their studies. Especially since the hospital will soon be receiving a new LINAC machine, there is a need to ease student's transition from theory to practice with minimal hours spent at the hospital.

Before leaving the university campus, we were lucky enough to be able to privately interview Prof. Kwame Kyere, Head of the Medical Physics Department. Prof. Kyere obtained his PhD in 1975 at the University of Leeds and was the first person to introduce Nuclear Medicine and Radiotherapy in West Africa. He gave us great insight into the biggest challenges the country faces in treating cancer patients. He also emphasized the benefits of providing their students with an interactive practical training video (action point 3). Although it was certainly hard to identify the steps to follow in such a challenging and political environment, we believe something very positive came out of our first meeting with the Medical Physics Department.

For the past two days, and along with several other volunteers from the Dream Africa Foundation, we have been teaching GCSE-level students Maths and Science at a local school in the mornings, a fishermen's village in the evenings. Children at the village come from low-income families that don't tend to prioritize their education. These evening support lessons are meant to help students that lag behind their same-age classmates. Although most volunteers are struggling to adapt to the lack of structure in Ghanaian schools, we are finding it extremely rewarding to teach such an eager group of young students.

Tomorrow morning one of the professors from the Medical Physics Society will be showing us the Radiotherapy department at the Korle Bu Teaching Hospital. We look forward to seeing Radiotherapy from a clinical perspective!

After our long and busy day today, we are both ready for our daily bucket shower and a good night's sleep.

NEXT EPISODES: - Akwaaba to Korle Bu Teaching Hospital see page 7 also see page 9.

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Charlbury Riverside Festival

The Charlbury Festival is in its 18th year had 30 acts playing across two stages being held on 27th and 18th July 2013. Amongst the free workshops was the IOP stand.



Rizwana Shelley, (Branch Secretary), attended the event on behalf of the branch committee and to report back regarding the festival. She says the young and old were enthused, entertained and educated --- all in one go, or as the Charlbury Festival Website put it "There are also whacky science experiments with Physics in the Field."



Super people on the IOP stand, all volunteers, amongst them was Alanna Richards. She was extremely enthusiastic, knowledgeable and had a super rapport with the young and old alike

Alanna said: 'I have just finished my A-Levels and I am going to study Physics at University. I searched for Physics Volunteering U.K. and got an IOP link. This is good experience, improves my confidence, good for my CV, good for future prospects, good for teaching and good for any job also IOP have paid my travelling expenses.'

The branch is considering supporting this event in the same way as L&SE branch supports the Towersey Festival.

Rizwana Shelley

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by

**The London & South East Branch IOP
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Akwaaba to Korle Bu Teaching Hospital.

On Friday last week we woke up early and took a taxi to Korle Bu Teaching Hospital, the premier health facility in the country and a teaching hospital affiliated with the Medical and Allied Sciences School of the University of Ghana. We met Mr. Samuel Tagoe at the National Centre for Radiotherapy and Nuclear Medicine. Mr. Tagoe is a Medical Physicist based at both Korle Bu and the University, where he lectures MPhil students in Radiobiology. One of the heads of radiotherapy at the centre welcomed us and gave us some background information on how the centre was established and how he envisions Radiotherapy will change in West Africa during the next 5 years.



The Radiotherapy Centre is manned by competent Ghanaian specialists and as one of the only cancer centres in West Africa, it attracts many patients from neighbouring countries. It was established in 1975 after a Cobalt-60 machine, which is still in use today, was donated by the Canadian Government. Despite the limited resources available, the team is dedicated to making them stretch as far as possible. Although terribly outdated, the cobalt-60 machine currently treats around sixty patients every day, twice the amount of patients treated in 1998. Throughout our visit, Mr. Tagoe emphasized that every aspect of the centre's development is limited by a lack of resources and specialized equipment. To make things even harder, the arrival and installation of a new Cobalt-60 unit and a LINAC machine has become political and has been delayed for several years. Due to a lack of funds to house them, the cobalt machine languishes in a big box in the hospital corridor, and the LINAC has been held back. The bunker for the new cobalt machine is nearly finished, and they hope to decommission the old machine within two months' time. They envision the new LINAC machine will start treating patients 6 months, once reinforcement has been provided to the old bunker and all bureaucratic obstacles are overcome. The one problem that is difficult to solve is financing most

patient's treatments. Specialists at Korle Bu daily face cases in which young females with early-stage cancers cannot fund a treatment that, on average, costs 150 USD. Late presentation of cancer treatments is also a major challenge in the country, and sadly about 65% of patients are managed with palliative intent. This is closely linked to the general population's low cancer awareness and strong faith in natural and alternative medicines. Cancer screening and cancer awareness education programs are therefore steps in the right direction and will hopefully soon be extended country wide.

Mr. Tagoe showed us some of the facilities: country's first paper-based cancer registry; a simulator that uses 2D CT data (awaiting the arrival of a new virtual simulator); a manually afterloaded LDR Brachytherapy and Fluoroscopy unit, and a 2D Treatment Planning Unit (3D has recently been introduced for prostate cancer treatments). Walking around Korle Bu Radiotherapy Centre resembled a journey through the history of radiotherapy. Considering their limited resources however, the team at Korle Bu does incredibly well and are role models to Medical Practitioners in other West African countries.

We felt extremely welcomed by the hospital staff, and we were happy to share with them that UCL's paRTner team has been collecting requested medical equipment all summer and is aiming for a first shipment in September.

As part of the outreach part of this project, this week we also gave a talk at a local secondary school about cancer and radiotherapy. Pupils seemed to have heard about the disease, but were not aware it could be cured. We tried making the session interactive and science-focused. Their parents came to personally thank us for visiting their school at the end of it. It was an extremely successful and rewarding experience!



NEW REMS SECRETARY



Mike Quinton, above, has agreed to take on the role of REMS secretary as from the branch committee meeting on 2nd October.

BRANCH DINNER 20 November 8pm

The dinner follows the talk given by Mark Miodownik.

Booking this year will be online and run by the conference Office. (Site not yet live at time of writing, 17th September.)

The menu is: -

Starter:

Blue cheese and forest mushroom tart with wilted endive salad

Main:

Chicken supreme on black truffled risotto, chargrilled baby leeks and red wine glaze

Pan roasted Sea bass on creamed leeks, carrot puree and crispy potato croquette

Sous vide halloumi on herbed polenta cake & chestnut mushroom (v)

Desert:

Bramley apple and cinnamon crumble tart with clotted cream ice cream.

Coffee/Tea/Herbal teas/Petit fours £36 pp Plus wines

UPCOMING EVENTS

The branch event leaflet should be with the October edition of Physics World.

A PDF of the leaflet is available at http://www.iop.org/activity/branches/south_east/lse/ this contains abstracts of events.

Booking only required where indicated (Herts and London Centres).

October Events.

Berkshire • 28 October, 7.30 p.m. • Dr Stuart Eves: Sophisticated small satellites from Surrey

Herts • 2 October, 7 p.m. • Hilary Summerfield Make them laugh! An introduction to the Ig Nobel prizes.

Please Book: e-mail d.crann@herts.ac.uk

Kent • 8 October, 7.30 p.m. • Prof. Ray Monk Inside the centre: the life of J Robert Oppenheimer

Kent • 22 October, 7.30 p.m. • Prof. R J Newport: Glass: A physicist's look inside.

Milton Keynes • 8 October, 7.30 p.m. • Dr Helen Fraser: Opening the cosmic freezer: the stuff of stars.

London • 2 October, 6.30 p.m. • Dr Ceri Brenner: Super intense lasers: the bright approach to exotic plasma physics.

Booking required Click the link for this event found on the branch calendar at http://www.iop.org/activity/branches/south_east/lse/calendar/index.html

London • 16 October, 6.30 p.m. • Dr Pedro Teixeira-Dias: The Higgs particle & the quest for the origin of mass.

Booking required Click the link for this event found on the branch calendar at http://www.iop.org/activity/branches/south_east/lse/calendar/index.html

London • 23 October, 6 p.m. • Joe Padiel and Nigel Blades (coffee from 6pm). The science behind cultural heritage: **To register:** email Sally Brown (sb20@soton.ac.uk) from whom further information can be obtained. Joint meeting between the L&SE Branch, the Environmental Physics Group & the RSC Environmental Group.

Last few days in Ghana!

After experiencing three hours of traffic to cross Accra on a Wednesday morning, we arrived to the School of Applied Sciences of the University of Ghana at 10 am to deliver our talk about 'Obtaining Medical Physics Research Experience in the UK.' Most of the students present we had met during the last session, but it was encouraging to see several new faces in the room.

Although many MPhil students had shown interest in pursuing PhDs in the UK when we first met them, the difficulty is funding as it is prohibitively expensive for many of them (not just the fees, also the living expenses). But, and most importantly, we strongly believe that our role is to work with and support Ghanaian universities and help them reach a higher level, rather than UK universities taking the best students away from them. Bringing some students to the UK would help a small number of individuals but is not in the interest of the development of radiotherapy in Ghana, which is for us the overall aim.



We therefore decided to slightly adjust the focus of our talk. As had been requested, we definitely addressed PhD applications and funding, but we also emphasized the possibility of obtaining PhD co-supervision from willing professors in UK universities. This should also lead to possibilities for students to come to the UK for short periods of time and gain access to equipment, facilities and resources that might not be available locally. The Medical Physics Department at UCL, as part of the paRTner initiative, is very willing to offer supervisory support free of charge for students registered at a local university in Ghana.

We learnt from the students, however, that it is even difficult for most of them to consider PhDs in Ghana, where yearly tuition is 4000 USD on top of having to fund their own resources and equipment. Several other students, however, showed interest in the possibility of obtaining work experience in the clinical setting in the UK. Awaiting the arrival of a new LINAC



machine at Korle Bu Teaching Hospital, MPhil Medical Physics students are eager to obtain short-term clinical work experience and acquire skills that they can then apply at Korle Bu. Our presentation was followed by a more informal Q&A session, during which we developed some action points for the next couple of months:

- 1) 1) Research the possibility for international student to do Medical Physics clinical internships in the UK.
- 2) 2) Investigate the possibility of funding one Ghanaian PhD student in the UK through a project/research grant.
- 3) 3) Investigate how to ease the process of Ghanaian students finding co-supervisors in the UK.

We also gave Ghanaian students links to valuable online resources and encouraged them to search for research opportunities of interest, contact potential co-supervisors, and correspond with us during the next couple of months.

After our presentation, we had been arranged a meeting with Prof. John Justice Fletcher, who will soon be involved in running the Ghana Institute of Physics. The IOP has already been active at a secondary education level and established a Physics and Electronics Centre at Ada, a town in the Volta region of Ghana. Prof Fletcher's team will soon be inaugurating an IOP Centre at the University in Accra, where he believes there is "the highest density of physicists in West Africa

To finish off our day, a couple of students drove us to the only private cancer centre in the country, the Sweden Ghana Medical Centre (SGMC). SGMC is managed by a team of 50 specialists from Ghana and Sweden. We are now on our way back to London. Our time in Ghana might have come to an end, but this partnership and collaboration has certainly just begun!

Ewa Karczewska & Marta Caballero