

The Woman Engineer



featured engineer

Alison Longstaff

Project Director
Hyder Consulting



On the right tracks

A logical approach to problem solving and the ability to interact with other people are important attributes to success, says a civil engineer working on one of Europe's largest construction projects.

Alison Longstaff BSc, CEng, MICE, CDir, MIOB is a team player and enjoys the daily routine of working with a group of like-minded individuals to achieve ambitious objectives, which is why she was the ideal choice as a key player on its Crossrail contract for WES company member Hyder Consulting.

Far from being a negative, Alison says being a woman has made her memorable and helped her have a "rewarding" career.

Alison's role as a project manager and project director in the rail sector means she is at the sharp-end of high profile contracts. Her current role as project director for Crossrail's Paddington New Yard Contract C336 is certainly focussing her mind. "Hyder are the design consultants to Costain who are appointed as D&B (design & build) contractor for this project," she told *The Woman Engineer*. "A typical day involves: attendance at meetings, liaison with our key architectural suppliers, ensuring that information is delivered to the agreed programme, communicating regularly with our client about changes or variations which may affect time and costs, solving problems, keeping the team motivated and buying the drinks at the end of the day!"

Along with her obvious technical abilities and good planning and problem-solving skills, other qualities are fundamental to Alison's daily role including a pragmatic

and personable nature, determination, the ability to see the bigger picture, and excellent communication skills.

She is a Chartered Engineer and Chartered Director and says being chartered in your specific area of expertise is an important recognition to have to be able to function at the highest level.

Alison transferred to her role in the rail sector a year ago after a period with Hyder as a business director in the utilities sector. Prior to that she was a partner in an engineering consultancy company. Taking up a role with the company three years ago also meant she had to relocate from Northumberland to the Midlands but the move has been worth it thanks to the challenge of the role.

When asked what the best things are about her chosen career, Alison said: "The satisfaction of getting the project over the line and working with the team in a collaborative environment." Alison's enthusiasm is being rewarded with a versatile and stimulating career in engineering, which, she says she would readily recommend to others. "I would say to anyone considering engineering as an option that you will find that it is a more rewarding career than you have ever imagined." Her advice: "Make sure you are good at maths and physics and also make sure that you are a good communicator."

In terms of the gender issue, in Alison's case being a woman has been an advantage. "Being female in the civil engineering world has never been a hindrance," She said. "If anything it has helped me to stand out from the crowd."

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From the editor's desk

One of the hardest choices women have to make in life is what to do career-wise when bringing up a family. This is a particularly thorny subject for women engineers who already stand out from the crowd in a male dominated environment. As is widely recognised, the role of motherhood should not be underestimated so let the balancing act begin!

The recent *Women in STEM: Are You IN or OUT?* survey brought the subject of returning to work after having children or other such career breaks to the fore. The barriers faced by many women looking to do this must be broken down or as a society we are wasting valuable resources and, from a purely commercial point of view, we are wasting the enormous financial investments we have made in the training and development of qualified and skilled people. In this issue we tackle the subject which has been raised by so many greats in the past including the late WES patrons Katharine, Lady Parsons (page 5) and Baroness Platt of Writtle (see opposite).

Indeed the subject is on the minds of women of all ages, including those engineering students who attended the *WES Student Conference* in November – how to juggle an engineering career and family life



Lynn Postle, FICME

shone out as the number one question being posed of the presenters.

Whilst we sadly mourn the passing of a great spirit and influential supporter of women in engineering in Beryl Platt, we also celebrate the 'new blood' coming into the industry at all levels. In this issue we are encouraged by the successes at the *Young Woman Engineer of the Year Awards*, new scholarships at educational facilities, new reports offering guidance on how to stop the drop-out in girls studying STEM subjects and corporate support of diversity issues.

It seems that the age-old issues are still there but the future is brighter if we can engage with more parents, educators and corporate bodies – now all we need is more willing volunteers so you know where we are!

Next issue contribution deadline 10th April 2015.



President's Message

This is the first journal since the WES AGM in November, and I am delighted to be writing this column as President. I'd like to extend a big thank you to Carol Marsh for her excellent and productive year as President last year.

We have some really exciting things going on at the moment in engineering diversity, and it is a real privilege to be able to instigate and influence the actions that are being taken. WES is at the forefront of promoting best practice in this area thanks to our long history of campaigning for and delivering change. We still have a long way to go before we achieve a sector that is truly equal in all aspects, but I know that our input is valued and needed. For example, we have just launched the new 'Sparks' programme to keep girls who express an interest in engineering on the right path once the outreach activity has finished. We are close to relaunching *MentorSET*, our long-standing mentoring scheme for qualified women in STEM, and we will have the additional features of mentoring to board positions and also a training capability. Let us know if you are interested in being involved in this as either a mentor or mentee. And we have just finalised the report on the *Women in STEM* survey we carried out last year which recommends a number of actions for stakeholders to ensure that women are more easily able to return to engineering after maternity breaks. Added to this are our thriving student groups, and our growing list of corporate partners. The more partners and members we get, the more we can achieve, so if you haven't already joined then now is the time, and it is even easier thanks to our new online membership capability. Thanks to our treasurer Caroline Jackson for making this happen.

Finally welcome to Amina Khalid who is working on *National Women in Engineering Day* to ensure that we have an even bigger and better day than we did last year on 23rd June. Hope you are getting involved. Oh, and I am writing a monthly blog if you are interested in finding out what we get up to in more detail. I would love to hear your ideas and comments.

Dawn Bonfield CEng, FIMMM, FWES

don't miss

OxFEST (including WES presentation)

7th and 8th March 2015 – Oxford University. www.conference2015.ox-fest.org/

National Engineering & Construction Exhibition (including WES Seminar and networking lunch)

24th and 25th April 2015 – NEC, Birmingham. www.engineerjobs.co.uk

First Women Awards

11th June 2015 – London Marriott Hotel, Grosvenor Square. www.firstwomen.co.uk

National Women in Engineering Day

23rd June 2015 – www.wes.org.uk/nwed



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Women's Engineering Society

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Baroness Platt of Writtle, CBE, HonFRaeS

Baroness Platt of Writtle, CBE, Conservative politician and aeronautical engineer, died on 1st February, aged 91

Throughout a long and diverse life, former WES patron and Honorary Member Beryl Platt had two passions - equality of opportunity, especially in education, and attracting more girls to study engineering and pursue engineering careers. Born in Leigh-on-Sea in 1923, her ferocious intelligence was recognised at school and she originally intended to go to Cambridge to read mathematics, but was diverted to aeronautical engineering under a scheme that offered bursaries to students pursuing subjects in support of the war effort. At that time Cambridge did not award degrees to women but she was "admitted to the title of degree" with a BA in Mechanical Sciences.

She went on to work at Hawker Aircraft, later British European Airways, where she worked on the testing and production of fighters like the Hurricane and Typhoon before marrying Stuart Platt, a childhood friend who she had met again, in 1949. On marrying she left work, as was usual custom at that time, moved to Writtle, had two children, Roland and Vicky, and entered local politics as an outlet for her unbounded energy. She rose to become an extremely effective chair of Essex Education Committee, where she oversaw a huge school-building programme, before being made a life peer in 1981. In the same year she was appointed to the House of Lords. She became chair of the Equal Opportunities Commission in 1983, at an age when most women retired, and used both roles to promote causes dear to her heart. She was encouraged by the EOC and Engineering Council to set up WISE, Woman into Science and Engineering.

Of course her attitude was very much aligned to the WES cause and WES members have been quick to reminisce about her contributions to the Society and to their lives. Sue Bird told WES she was a "one-off" who was very approachable and sociable. "My overwhelming impression of her was her enthusiasm or even passion for getting women into engineering," she told *The Woman Engineer*. "This was absolutely genuine, and never faded. She was involved in so much but I never saw her anything but keen to get her ideas across, and delighted when something she had been involved with bore fruit.

"She has always been a great supporter of WES, and was generous with her time and her involvement."

Linda Maynard echoes the sentiment as she remembers her support during her own WES presidential year in the mid-eighties: "She was such an enthusiastic supporter of WES and WISE for so many years.

"She was appointed as chair of the EOC in 1984 and was of course heavily involved in the WISE launch in the same year, working closely with the Engineering Council and WES. Her support continued during my presidential term at numerous events. We gave a joint address to the Parliamentary and Scientific Committee in the House of Commons in April 1986 (Women in Science and Industry) - a cross-house presentation attended by over 100 MPs and members of the House of Lords. She agreed to speak at a number of events I organised including a 'GASWISE' conference in December 1985 and she gave the opening address at one of my annual WES conferences in October 1987.

"She gave so freely of her time and was tireless in her support of women on a personal and professional level - she will be sadly missed."

She used the second part of her career - as a Conservative peer and chairwoman of the Equal Opportunities Commission (EOC) - to promote women in science and engineering.

In her handbag she carried a copy of the Sex Discrimination Act and a screwdriver.

The Times

As well as education, she advocated more job-sharing and part-time work at higher levels of business and worried about helping married women returning to work - something she herself had done. "They feel so inadequate," she said.

The Times

WES member Petra Gratton, admissions tutor (mechanical & aerospace engineering, UG Courses) and programme manager: *Women in Engineering Programme* at Brunel University, is particularly reminded of Beryl's warm personality. "I first met Beryl when I was running the London branch. Then when I became President, I recall vividly a discussion we had on a stroll to the tube after a WISE meeting at the Engineering Council. I was a little embarrassed at not being more vocal in the meeting, but she counselled me not to worry about it; saying my presence was evidence enough of my enthusiasm and I should never be embarrassed to say what I thought. I really appreciated her wisdom, and cherish that piece of advice."

In 2013 in recognition of her work in support of the engineering profession in general and Incorporated Engineers in particular the Worshipful Company of Engineers, a Livery Company of the City of London, launched the *Baroness Platt Award for Incorporated Engineer* presented to the most outstanding individual registered as an Incorporated Engineer (IEng) each year.

WES would like to thank all those who contributed to the preparation of this tribute giving us an insight into the life of a remarkable woman who will be sorely missed.

Barriers exist that prevent women returning to work after maternity leave according to 60 per cent of the respondents to a recent national survey.

Could RETURNSHIPS help more WOMEN BACK INTO ENGINEERING?

The percentage quoted above is even more sobering considering that this analysis came from a group of women of which only 22 per cent had taken maternity breaks, pointing to the fact that many women haven't made it back to the engineering sector, highlighting that the sector is failing to hold on to a group of experienced women that it can least afford to lose.

The statistics are from the *Women in STEM: Are you IN or OUT?* survey carried out in 2014 by WES and partners Prospect Union, TRS and Women in Manufacturing which was completed by an impressive 5000+ respondents. We hear a lot in the UK about the looming skills gap in engineering, and a great deal of collective effort is going into increasing the number of younger girls who consider engineering as a suitable career for them. However, this group of women at the experienced end of their careers get very little help or support to return after maternity breaks, and consequently we are wasting a valuable supply that we have invested a lot of resources into. Moreover, this is such an important group of women for another reason too - these women are the stepping stones between the engineering sector and the schools and wider communities, and could have an incredibly valuable role if only we encouraged them to remain engaged.

BARRIERS

The survey asked the respondents to identify the barriers that they felt existed to returning to work after a break, and these were identified as *FINANCIAL*, including cost of childcare (52 per cent); *TIME* - not enough flexitime, job sharing, condensed hours, part time opportunities (27 per cent); *TRAINING and GUIDANCE* - not enough help and support offered in terms of soft skills and technical skills updates (25 per cent); *GEOGRAPHICAL* - not able to move to find work (16 per cent).

When asked what could be done to overcome these barriers, 58 per cent said that some form of *training or support* would help them get back into a STEM role after a break. Types of training mentioned were:

- Professional development (43 per cent)
- Careers advice, including routes back into engineering and recruitment matching services, help with updating CVs and with interview techniques (14 per cent)
- Specific sector related training and development (12 per cent)
- Mentoring (8 per cent)
- Training for their *employers* on diversity, unconscious bias, etc (6 per cent)

Interestingly only half of the respondents belong to professional engineering institutions, which were seen as not providing sufficient reasons to become members. Looking more closely at the professional institutions has revealed that few - if any - of them have any specific products or services to support these women members, and this is surely a cause for concern, but also an opportunity for growth. Currently women are entitled to reduced membership fees whilst on maternity leave, but this is often not communicated to the women concerned, and the cost of retaining chartership registration during an extended maternity break is often so prohibitive that many women let this hard earned professional qualification lapse, and then never get it back.

Almost 10 per cent of the survey respondents took extended or cumulative maternity breaks totalling more than five years, and it is this group in particular who find it more difficult to return to their former careers as time out of the industry increases. As a way of addressing this issue we are recommending 'returnships' as a way of getting these women back into work.

RETURNSHIPS

Returnships are a relatively new concept in the UK, and a simple and effective way to help get women back onto the career ladder. They are equivalent to internships - effectively placements or short term contracts - in which the returning woman follows a set programme of activity designed to bring them up to speed with the work of the

company, move them around so that they gain a number of relevant experiences, and monitor and support their career progression. Just as with internships, the employee may or may not be employed in a permanent capacity at the end of the contract, depending on whether a suitable role exists, and on whether the employee has proven to be suitable.

The investment banking firm Goldman Sachs see their Returnships in the following way: "In the same way that an internship offers a guided period of exploration, a 'returnship' provides individuals with an opportunity to sharpen their skills in a work environment that may have changed significantly since their last experience as an employee. It also gives participants the ability to explore a new area of expertise and learn new skills. Whether it leads to a full-time career, or serves to sharpen the skills necessary to take the next step, the *Goldman Sachs Returnship Program* is a valuable experience for anyone who's ready to re-enter the workforce."

The government recently allocated some funding to address this issue through an *Employer Ownership Fund* that would match any input above £40,000 that employers were willing to put into developing women engineers. This fund, however, received very few applications and only allocated £0.3 million of a £10 million total, so we are waiting to hear how the underspend will be used. Returnships are one practical way that we believe this money could usefully be spent, and this is the proposal that WES and partners have put to the Government recently.

A number of other recommendations have been made as a result of the survey to address the barriers that have been identified, and we will continue to draw attention to this important issue so that we utilise this essential resource more effectively.

The final report on the *Women in STEM* survey is now available at: www.wes.org.uk/inorout

Further background information on Returnships can be found at www.wes.org.uk/returnships

Dawn Bonfield, WES
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RETURNING to Work After a Long Career Break

When you have been out of paid work for many years, returning to employment can be a daunting prospect. Your professional identity as an experienced engineer is a distant memory and it's hard to feel capable of picking up your career where you left off, say co-founders of the organisation Women Returners Katerina Gould and Julianne Miles.

We've been helping professional women to get back to fulfilling work for many years, motivated by the difficulties we and our peers encountered when we returned to work after our own lengthy career breaks. From our experience, one of the most common 'returner' mistakes is to launch straight into an unfocused job search. This has the lowest likelihood of success and is more likely to dent fragile self-confidence than get someone back into a satisfying job. Instead, we suggest a more productive route back to work.

Start by getting clear about what type of role you want to target; a scattergun approach rarely works. This is a great opportunity to consider what you enjoy doing rather than just thinking about what you're qualified to do and what jobs are available. Think about what you have been most motivated and energised by in your past jobs and use this knowledge to identify the types of activity and environment that best suit you. Do you prefer managerial or technical roles, operational or strategic? Do you prefer large well-structured organisations or smaller more hands-on organisations?

Then think about when and where you would like to work. Would self-employment or freelance contract work be a viable option? If you need greater job stability but want more work-life balance, don't limit yourself to looking for advertised part-time roles. There are many ways to work flexibly around your personal commitments, in terms of time (e.g. flexible start-end time, compressed hours) and location (working from home for part of the week). Recent research found that most employers are open to flexible working, even though this is rarely stated in the job description.

We find that the majority of returners undervalue themselves. Remind yourself of all that you can offer an employer - your strengths and skills as well as your

experience and qualifications. Ask friends and family for feedback, and analyse your past achievements to pick out the skills you demonstrated.

Make sure you are up-to-date with your sector vocabulary and trends. Subscribe to a professional magazine, read about current issues, follow key employers on Twitter and 'talk shop' with ex-colleagues. Consider taking a refresher course and, if you're concerned about technology changes, sign up for an IT update.

One route back to engineering is postgraduate study to open up new networks and opportunities. The WISE website has several examples on its role models page of engineers who have returned via specialised Masters programmes, funded by research councils or industry sponsorship.

Don't just rely on online job boards; most returners find their roles through contacts. To make yourself feel and sound more credible, start by crafting your 'career story'. Outline your pre-break work experience and qualifications. Then give a brief explanation for your break - don't apologise or justify - and mention any

relevant study or voluntary work. Finish with a short description of what type of work you are targeting now. Start by telling friends, family and local acquaintances what you're looking for - you never know who might be able to help.

Create a LinkedIn profile and use it to reconnect and meet with former colleagues - remember that their image of you will be fixed in time as the professional engineer you were. Build your professional networks by joining industry groups and attending or volunteering at industry events.

If you have not worked as an engineer for many years, think about getting up-to-date experience in alternative ways:

- Find a volunteering role using your engineering skills through a charity or professional organisation
- Through your contacts, propose a short project-based 'work placement'
- Look out for returning professional internships, 'returnships', an innovative concept pioneered in 2014 in the UK financial sector which Women Returners and WES are hoping to expand into the UK engineering sector in 2015 (for further information see WES and Women Returners websites).

This will build your network and professional confidence, giving you something to discuss in networking meetings and interviews. Furthermore, it will fill your CV gap to enhance targeted job applications and may lead to a permanent role.

Remember that you are the same capable person you were before your break - just out of practice.

ABOUT THE AUTHORS

Katerina Gould and Julianne Miles are the co-founders of Women Returners (www.womenreturners.com), a UK coaching, consulting and network organisation, which specialises in the return to work of professional women after an extended career break. There is also an opportunity to join the free *Women Returners Professional Network* to receive return to work updates and to connect with other returners. Their organisational arm, Women Returners for Business, advises companies on designing returnships, delivers tailored returner coaching and provides access to the returner talent pool.

STOP PRESS.... Thames Tideway Tunnel has just announced the first returnship programme in engineering and is looking for applicants for its engineering positions. www.thamestidewaytunnel.co.uk/about-us/tideway-returner-programme

In a speech given to the North East Coast Institution of Engineers and Shipbuilders on 9th July 1919, the Honourable Katharine, Lady Parsons spoke of the contribution women made to engineering and shipbuilding during the first world war and the disappointment they felt when men returned and women were banished from industry.

The following are excerpts from her speech:

"Great hopes were entertained by many women that a new profession was open to them, where they could earn good wages and where they would have some scope for their skill and intelligence. But with the signing of the Armistice all such pleasant hopes were destroyed, the training schools were closed to women, the trade unions reminded employers of the government pledge to restore trade union rules, and within a few weeks the demobilization of women dilutees was general..."

"About 1½ million women had received a certain amount of training in schools that has cost the country over £30,000,000 [a staggering figure, amounting to £636,300,000 in today's money, according to The National Archives]. All these prospective wealth producers are scrapped; the country is much the poorer. The engineering industry is again barred to women by an agreement made between the Treasury and the trade unions..."

"It has been a strange perversion of women's sphere - to make them work at producing the implements of war and destruction and to deny them the privilege of fashioning the munitions of peace."

It's nothing new



A 27-year-old project manager working on Renishaw's next generation metal 3D printing machine has won the WES Prize at the IET's Young Woman Engineer of the Year Awards.

WES Prize 2014



Lucy Ackland is based at Renishaw's additive manufacturing products division in Stone, Staffordshire.

After joining Renishaw as an apprentice aged just 16, in 2012, Lucy completed a first-class honours degree in mechanical and manufacturing engineering which was funded by the company. She is a STEM ambassador and has run engineering-based activities for young children over many years, including school projects, talks, seminars, after school engineering clubs and judging STEM club projects. In 2014 she was invited to join the board of trustees of the charity Young Engineers.

During her day job Lucy co-ordinates a research and development team to achieve new technologies in additive manufacturing. Her role covers all aspects

of design, from product concept to testing and preparation for production.

Lucy has progressed through a variety of roles at Renishaw whilst studying hard to achieve further engineering qualifications on a day release basis.

Speaking after the awards ceremony which was held in London in December, Lucy said: "I'm so happy to have won this award - it means a lot to be recognised for the work I do in a really exciting, upcoming industry. I'm pleased to be considered a role model for future generations of female engineers because I believe

engineering is a really enjoyable career choice but sometimes people are put off by misleading stereotypes."

Lucy will now embark on a series of events acting as a role model promoting the benefits of a career in engineering for women. Thanks to her ongoing commitments as a STEM ambassador, she is ideally suited to this activity.

WES President, Dawn Bonfield said: "The Women's Engineering Society is delighted that this award goes to Lucy Ackland, who has already done an enormous amount to engage and inspire

Senior professionals hope to 'STEM' an imbalance

Professor Liz Bacon, BCS (the Chartered Institute for IT) President, is establishing a network of senior women involved in STEM subjects. Those involved in STELLAR aim to encourage more women to consider careers in science, engineering, maths and IT.

A number of women have already volunteered to support the network including WES President Dawn Bonfield and many other leaders of professional bodies.

Liz Bacon explains: "As part of my presidential year, I've invited senior women to join a network to support work already being done to address the lack of women in the professions at all levels. Our aim is to do this through such initiatives as mentoring and work shadowing schemes, acting as role models and publicising success, as well as encouraging good practice such as supporting women returners to work with training and flexible working patterns."

The network was launched at the recent BCS Presidential lecture and dinner delivered and hosted by Professor Bacon.

Dr Frances Saunders, President of the Institute of Physics said: "Girls do need to see that there are inspiring women they can identify with having successful careers in STEM before they will be convinced that it is something they would want to do themselves. We need to encourage them to join us in our professions rather than just tell them that studying science and maths will be good for them."

For more information visit www.bcs.org



Up for the challenge, supporters of the initiative photographed in the Painted Hall, The Old Royal Naval College, Greenwich.

LUCY ACKLAND talks to *The Woman Engineer*

Having had what she describes as “the most challenging, exciting and enjoyable” year of her career in 2014, picking up the *WES Prize* at the *Young Woman Engineer of the Year* celebrations was a real bonus for Lucy Ackland. However, she admits that great things can be achieved if you push yourself.

“If you drive yourself to do your best you really can achieve amazing things and I really am proud of winning the *WES Prize*,” she told *The Woman Engineer*.

She explained how being a ‘poster girl’ for her employer is her way of thanking them for their continued support. “Renishaw have been incredible during the eleven years I have been with the company and they have supported my continued learning and have allowed me to shape my career from a really young age.”

Lucy joined the company on an apprenticeship at 16 and says this was the most suitable route for her offering plenty of benefits. “I loved maths and science at school but there wasn’t any real encouragement to choose a STEM career. Then I went on an engineering experience weekend at 13 and I loved it. When the time came I knew I wanted to find an apprenticeship. I think doing an apprenticeship is fantastic as it allows real flexibility. If you want to stay doing what you are comfortable with you can and if you want to ‘grab the bull by the horns’ and do more training and take it as far as you want to go you can. When I started I was the only female apprentice in my year but we are now starting to see a difference with more girls applying, although I still think females will be a minority in this field for some time and I don’t see that changing in my lifetime.”

Despite that belief, Lucy is confident that promoting the benefits to other girls is having an impact. “Promoting engineering isn’t a new thing for me. As soon as I got involved at 16 I could see there was a need to encourage more young girls to see what a fascinating and exciting career choice it is.”

Throughout her career so far Lucy has been aware of WES, and the synergy between what she is trying to do and the aims of the Society are not lost on her. “I have been keeping up-to-date with WES activities and I am particularly keen on Twitter and forums such as this to spread the word. We want the same thing and I am really looking forward to my ambassador role for WES in the coming months.

“One of my favourite things to do is volunteer at the *Big Bang Fair* and that is coming up soon. It will be my fifth one but it is always a great thing to do.”

With her enthusiasm and commitment Lucy looks set to continue to drive her career and the WES objectives well into the future.

the next generation of female engineers. We are looking forward to working with Lucy this year to do even more for young people, and crucially their parents, in changing stereotypes of the engineering sector and especially of the apprenticeship route into engineering.”

Chris Pockett, Renishaw’s head of communications, said: “We are very proud of what Lucy has already achieved during her engineering career with Renishaw and her tireless work, often in her own time, to promote STEM-based careers to young people. The *WES Prize* is fantastic national recognition of this work and we know that she will continue to be a great ambassador for the engineering sector over the coming years.”

During the awards ceremony, 28-year-old senior hardware engineer Naomi Mitchison from Selex ES was named the *IET Young Woman Engineer of the Year*, and will play an ambassadorial role in the forthcoming months and 20-year-old Jessica Bestwick, who works for Rolls Royce, was presented with the *IET’s Mary George Prize for Apprentices*.

Main image: Lucy Ackland (left) is presented with the WES Prize 2014 from the BBC’s Steph McGovern

Inset image: Young Woman Engineer finalists enjoy the awards ceremony, (left to right): Laurie-Ann Marshall; WES Prize winner Lucy Ackland; Young Woman Engineer of the Year Naomi Mitchison; Jessica Bestwick; and Hannah Pearlman

More women-only engineering MSc scholarships at Brunel

For the second year running Brunel University London is to offer £10,000 a year scholarships across its MSc engineering courses open to females only, with 30 awards on offer.

The move follows the successful introduction of its *Women in Engineering (WiE)* programme in 2014 which combines bursaries and a range of other activities from matching students with professional engineers in industry to leadership, communication and leadership skills training.

Brunel director of planning Dr Rosa Scoble said: “We are already one of the largest engineering departments in the country with ambitious plans to become the UK’s biggest.

“Like the engineering profession itself we are acutely aware that to continue to thrive we need to recruit many more women on to our courses.

“The pilot programme is already proving an enormous success both with students and with industry with professional engineer mentors volunteering their services from blue chip companies like Arup and BAE Systems.

“As well as the MSc scholarships we are extending the *Women in Engineering* programme to undergraduate students from 2015/16. We already have more than 400 female student engineers on campus and this year we are looking to scale up that number drastically.”

Former UCL undergraduate Amber Fahey, now studying for an MSc in *sustainable energy technologies and management* under the scheme, said: “Not only is my mentor Alex Knight of engineering consultancy Fraser-Nash helping me enormously in all kinds of ways but there is a strong team spirit among the nearly 100 female postgraduate engineering students here at Brunel and we think that will form the bedrock of an ever-growing network.”

Dr Scoble added: “Details of the scholarships can be found on the Brunel website [www.brunel.ac.uk] but we are also going to need many more volunteer mentors from industry as we extend the programme to embrace female undergraduate engineers.”

To help in this matter email: WomenInEngineering@brunel.ac.uk

Pictured is Brunel engineering MSc student Amber Fahey



School patrons help engineer the future

Alton Convent School in Hampshire recently welcomed two leading lights from the worlds of science and engineering to celebrate the opening of its new science laboratories.

Internationally renowned astrophysicist Dame Jocelyn Bell Burnell FRS, FRAS delivered a keynote address during the day, speaking to over one hundred pupils from year 10 to the sixth form. She was joined by WES President Dawn Bonfield to provide hands-on advice during a physics extension lesson. Both women are patrons of science and engineering at the school. During the visit Dawn also launched the steering group for WES' new SPARKS programme (see page 10), with five pupils from Year 9 to the sixth form playing a pivotal role.

The new science laboratories opened in September 2014. During 2014, the school was also proud to launch the *National Schools Outreach Programme* for WES, in which pupils from two local secondary schools also participated.

The school is currently reviewing its STEM outreach programmes working with WES and ambassadors from the Institution of Mechanical Engineers and is inviting aspiring female scientists from two local schools to participate in 'SET for Sport' on 16th March, a one-day initiative developed by Portia Ltd which looks at STEM across a multitude of sporting contexts.

Dame Jocelyn Bell Burnell was named as one of *Britain's Top 100 Most Powerful Women* by BBC Radio 4's *Woman's Hour* in 2013 and is passionate about promoting science among girls and young women. She said: "I am delighted to support Alton Convent School as a patron, along with the completion of the new science laboratories, the school is developing a comprehensive programme of speakers and workshops to inspire female scientists in the school and wider community. I am proud to play my part."

Picture: Dame Jocelyn Bell Burnell and Year 10 students from Alton Convent School



New STEM centre

The University of Derby has been granted £5 million from the Higher Education Funding Council for England.

The funding will be used as part of a £12 million investment in a new 4,200m² building for science, technology, engineering and mathematics. The money, part of a wider £200 million investment by HEFCE, will support an increase in high-quality STEM students at the university.

The new centre represents a 30 percent increase in the size of the existing site and is expected to be opened in 2017.

The building will focus on real world learning, combining functional teaching space with infrastructure designed for the specific needs of engineering.



Women in the driving seat

Curriculum manager for motor vehicle engineering at West

Nottinghamshire College's Engineering Innovation Centre John Wilson, has noticed an increase in the trend of females wishing to study this subject at the Mansfield-based college.

The new centre can train up to 600 students in the sector in a range of programmes from entry to university-level - including full-time learners, apprentices and those studying higher education programmes - as well as local employers in the engineering sector. There are currently 14 females at the centre studying motor vehicle engineering from entry-level through to Level 3.

Wilson said: "I think increasing numbers of females are after a different challenge and see motor vehicle engineering as something that maybe they wouldn't traditionally go into."

"I've found that female students do really well at the higher levels where there is more diagnostics required. Students working in diagnostics have to be logical and follow sequences and it appears that female learners tend to think more about the process and do better at this."

"As a college we're always encouraging females to think about studying an engineering subject and we hold our own specialist open evenings where potential students and their parents are encouraged to come along, look at what the course involves and ask all those questions."

"I think that both schools and the industry in general could do more to promote female engineers, especially in the automotive sector. Many small independent garages are still predominately male-orientated businesses and they are missing out on an excellent skill set by not being more inclusive but I'm also confident that change is most definitely afoot."

One student at the centre is Jessica Wells (pictured above), 18, in year two of the Level 3 *BTEC Extended Diploma in Engineering*.

Jessica studied an engineering unit at the old college campus when she was following the level 2 engineering diploma throughout her GCSEs. As one of three females in her class she told *The Woman Engineer*: "We feel no different to than if we were in a class full of females as there is no discrimination in this college and there is no problem with women in our class. We do the same work, we work just as hard and we all feel the rewards of our hard work."

"People assume because we are women in engineering that we need extra care and that we aren't capable of the same job as a man. We are more than capable and we prove every day that we can do the same job as a man."

The Institute of Advanced Motorists (IAM) has appointed Sarah Sillars OBE, one of the leading women in British industry, as its new chief executive officer as she returns full-time to the automotive sector.

Her mission will be to improve driving and riding skills and to campaign for legislation to improve road safety.

Sarah takes up the position having overseen the commercialisation of Semta, the sector skills council for engineering and advanced manufacturing.

Awarded *Industry Personality of the Year 2004* and *Outstanding Achievement Award 2006* by automotive magazines *AM* and *Motor Trader* respectively, Sarah was listed in the UK motor industry's most influential top ten and the most powerful female executive, according to the *2007 AM Power List*.

Bedtime reading

Three reports that offer an insight into the current state of engineering have recently been published.

In the WISE report 'Not for people like me' Professor Averil Macdonald (professor of science engagement, diversity lead for nine university physics departments in the South East of England (SEPnet) and a member of the WISE board) explains why STEM outreach and engagement activities have a limited impact on girls and other young people who are under-represented in the STEM workforce. The report goes on to suggest solutions to this.

A full copy is available at: www.wisecampaign.org.uk/education/not-for-people-like-me

The IMechE 'Five tribes: personalising education' report describes a survey of values and beliefs, attitudes and preferences of a representative sample of 1,500 UK citizens aged 11 to 19. The results show that adolescents divide themselves broadly into five categories, determined by their values as well as their reactions to engineering as a subject and as a potential career. The report considers how best to spend the limited amount of resource on encouraging young people to choose a STEM career path.

To view the report visit: www.imeche.org/knowledge/themes/education/five-tribes-personalising-engineering-education

Now in its 17th year, the latest version of the *Engineering UK* report, detailing the current state of engineering can be accessed at: www.engineeringuk.com/Research/Engineering_UK_Report_2015/

3M appoints its first female MD for the UK

The diversified technology company, 3M, has appointed a trained engineer as its first female managing director for the UK and Ireland region.

Christiane Gruen was previously managing director of the company's Alpine region covering Switzerland and Austria.

The company is a strong supporter of the UK government's *Your Life* campaign to encourage greater participation among women in the career choices of STEM subjects and Christiane's own career embodies that spirit.

After graduating as an engineer in food technologies, she joined 3M in 1984 as a technical assistant in her native Germany and went on to hold a number of positions of increasing responsibility in the drug delivery systems and health care markets businesses.

As managing director for the UK and Ireland, she now leads 2,900 employees across 19 locations, including nine manufacturing sites.



More than 400 students from North East Derbyshire's schools have hailed Chesterfield's very first manufacturing festival, *Made in Chesterfield*, a success. The week (10th to 14th November) featured a programme of manufacturing dedicated events.

The week-long festival was designed to showcase the town's successful manufacturing and engineering sector and ignite career interest in the sector from young people as well as bring together the business community.

School events included tours of United Cast Bar Ltd, Franke Sissons Ltd, MSE Hiller, Penny Hydraulics, Corrugated Case Company and Kingfield Electronics, as well as making a stainless steel die at NLT, and an open evening at Chesterfield College.

Is a 'skills stalemate' a bigger threat to UK engineering than the skills gap?

New research shows engineers are suffering from a lack of career progression.

The report, prepared by global professional services company Towers Watson in partnership with the Institution of Mechanical Engineers, suggests that maximising the productivity of the current workforce has been overlooked while industry has instead focused on attracting the next generation to plug the skills gap.

The inaugural *UK & Ireland Engineering Workforce Study* reveals that employers could do a much better job of engaging and retaining their existing talent. Just under half of engineers think their company succeeds in holding onto talented individuals. While over 40 per cent of engineers plan to leave their current organisation in order to move up the ladder, naming lack of career development and salary as key factors in their decision.

The report indicates that a "forgotten generation" of engineers, who are significantly less engaged, lie at the heart of this issue. In their thirties and typically with line-management responsibilities, 45 per cent believe there are substantial obstacles to doing their job well, compared to 35 per cent of 20-year olds.

A copy of the report is available from WES, email: info@wes.org.uk

www.wes.org.uk

Creating a LAUNCH PAD for future engineers

A group of young engineers working for aerospace company Marshall have created a new programme to inspire children and teenagers to consider careers in engineering. The Marshall LaunchPad Scholarship is aimed at children in the wider Cambridge area aged between 8 and 18 from selected schools. Initially there will be four primary, five secondary and five sixth form schools involved, with the aim to expand this number over time.

WES member Dawn Fitt attended the launch event in January, which focused on engagement with eight pre-selected schools in Cambridge, and reports here for *The Woman Engineer*.

The students who 'graduate' from the unique scheme will form an alumni, which can then go on to support younger students who are entering the scheme.

A vital part of the programme is the desire to encourage more women to take up engineering and STEM subjects.

Marshall has about 35 STEM Ambassadors across the group and the intention is to utilise the ambassador network to: increase the number of engineers in UK industry, increase industry diversity, and improve awareness. The ambassadors will also celebrate success through developing networks, encouraging participation and sharing knowledge. They also intend to develop links with industry and challenge stereotypes.

THE SCHOLARSHIP

The *Marshall LaunchPad Scholarship* is a three-tiered scheme designed to follow students through from Year 4 all the way through to the end of Year 13 (or equivalent) - a completely unique concept. Students studying academic years 4-6 can apply to become *Stars*, those studying Years 7-11 can apply to become *Innovators* and those studying Years 12-13 can apply to become *Scholars*.

At the end of each tier of the scholarship students will have to reapply to be awarded with the next status level of the scholarship. However, this next status will not be automatically received; those previously awarded with lower tier status will have to show how they have improved by showcasing what they have learnt and even how they have helped others through what they learnt. Although not all applicants will be awarded with *Star/Innovator/Scholar* status, every applicant will receive the same help and support to help with studies and getting into a career in engineering.



For more information about how to get involved, Tel: 01223 373736, email: info@marshall-launchpad.com or visit: www.marshall-launchpad.com



President's Monthly Blog

During her WES presidency Dawn Bonfield will be keeping a blog of her activities, so please contact her with any comments or suggestions for her presidential year, email: president@wes.org.uk
To read the blog visit the homepage at: www.wes.org.uk



@wes1919

Let us know what your thinking

Event partnership

In addition to our three current Event Partners; IET, BAE Systems and Selex ES, WES now has two new ones for 2015 - Dialog Semiconductor PLC and P&G.



Dialog Semiconductor creates the world's most energy-efficient, highly integrated, mixed-signal integrated circuits. These are optimised for smartphones, tablets, ultrabooks and other portable devices.

P&G is a leading consumer product company that provides consumer products in segments like beauty and grooming, health and wellbeing, household care, and snacks. The company is committed to creating a diverse workplace.

Event partnership is our highest grade of partnership, which combines headline event sponsorship with company membership for the year.

We are extremely grateful for this partnership and are looking forward to working together with all of our event partners over the coming year.

Developing the SPARK of enthusiasm

WES initiates 'Sparks Programme'

Following debate in the House of Commons in October, WES has embarked on a new project to provide ongoing encouragement for girls who express an interest in STEM and to address the STEM opt out rate for girls during the critical teenage years, through a targeted stream of communication.

Despite the effort and resources dedicated to bringing excellent engineering experiences to school students, and the evidence that suggests girls enjoy this as much as boys do, a high proportion of girls do not pursue STEM education or careers.

The missing element is ongoing engagement with the girls that have shown an interest and an aptitude for STEM, to nudge them in the direction of a STEM career. Currently, enjoying the STEM activity is not being associated with a career choice.

The Sparks programme is set to 'bridge the gap' between the STEM enrichment activity and the point at which careers are being chosen, in other words 'to keep the spark alight.'

THE MECHANICS

WES will enrol girls who express a particular interest in STEM, and their schools, into a scheme, which would feed them with encouragement and information through a variety of social media appropriate to their age. This will include information and advice on careers, competitions, open days or visits, exhibitions or shows, role models, summer schools, home activities, great engineering projects, and job or educational opportunities. Fundamentally WES will act as a conduit for the information and resources widely available to help drive the message home.

The project needs to be undertaken in partnership with other organisations, as this is fundamental to ensuring that current, relevant and appropriate information is gathered and disseminated to nurture the next generation of engineering talent.

WES is appreciative for the support and encouragement of the Royal Commission for the Exhibition of 1851 in this endeavour.

For more information or to volunteer to assist with the Sparks programme contact Dawn Bonfield, email: office@wes.org.uk



WES President Dawn Bonfield is pictured with pupils from Alton Convent School during a recent physics extension lesson where she provided practical advice and launched the steering group for the Sparks programme

Transport for London (TfL) RAPIDLY PROGRESSING DIVERSITY AGENDA

As a service provider to one of the most diverse cities in the world, TfL works hard to understand its passengers' needs and respond to them through work such as the *Mayor's Transport Strategy* and *Single Equality Scheme*.

Over the last few years TfL has rapidly progressed its equality and diversity agenda. Some initiatives focussed specifically on women include:

- Leading maternity and paternity policies and encouragement of flexible working for women and men where possible
- Encouraging growth of the proportion of women at the company at all levels from board and senior to operational levels
- A 200-strong internal women's network offering events and support for women across the whole organisation

- A dedicated equality and diversity team promoting programmes to encourage diversity across the organisation including *100 Years of Women in Transport*
- *Women's Springboard Programme* which aims to achieve better work life balance for staff, assisting in developing their career vision and skills they need to achieve their goal.

Speaking about their involvement with WES, Dana Skelley, director of asset management for surface transport, said: "Linking up with WES is of great benefit to TfL, we have a lot in common and there is much to be gained from working together. We aim to constructively influence the gender mix in our majority male industry, especially in engineering and construction. Women make up 22.8 per cent of TfL employees with 22.5 per cent in senior management roles and we are committed to increasing these numbers. We work closely with our supply chain, particularly with construction apprentices and graduates so that women have a wide range of career choices." www.tfl.gov.uk

New Members:

Jumi Adelana, Yasmin Ali, Rose Atkinson, Nazish Azlam, Sarah Backhouse, Lauriane Buffe, Natalie Cropp, Katharine Dawson, Alicia Essler, Naomi Green, Georgia Griffiths, Gillian Haggerty, Louise Hardy, Jennie Harvey, Jacqui Hogan, Becky King, Laura Kitchen, Shauna McAuley, Morenike Onadipe, Jaz Rabadia, Sharon Ross, Becky Shering, Anna Silcox, Leanne Smith, Sarah Sordy, Claire Spillane, Maria Terracciano, Janice Turner, Alessandra Villa

New Fellows

Sarah Springman, Sally Sudworth

WES is pleased to welcome Sellafield as a Company Member. More about them in the next issue.

New Student Groups

Loughborough University Women's Engineering Society joins the existing WES Student Groups - The Society of Women in Engineering at York and The Women's Engineering Society Bath

Calling all students!

Could you help promote WES at your university? We can send extra copies of *The Woman Engineer* for distribution at your university or college or you can set up a WES Affiliated Student Group. Email us to see how you can progress your ideas, info@wes.org.uk

Volunteer and build your CV

Have a look and see how you can help WES in 2015.

We need your help to build on the amazing things we are doing and relationships we are developing this year. There are many ways you can get involved depending on the time you can donate from helping with our Twitter and social media campaign, compiling data, website updates, to visiting schools and attending events on our behalf.

To see the list of things we need help with please visit the website or contact head office, email: info@wes.org.uk



It's already time to start planning for the *2nd Annual National Women in Engineering Day (NWED)*, which takes place on 23rd June 2015, and its time to ask yourself: "What will you do to help focus attention on the great opportunities for girls and women in engineering?"



UPDATE US

Don't forget to let us know what you have planned for NWED 2015, so we can regularly update our events page at www.nwed.org.uk/events.html

RESOURCE PACKS

The NWED resource packs are now available. Please request your free pack from: nwed@wes.org.uk

The pdf version is also available online at www.nwed.org.uk/resource-pack.html

REGISTER OF FEMALE ENGINEERS

If you are a female engineer, join our *Register of Female Engineers* and inspire the next generation of young women to consider engineering as a serious career. You will have the opportunity to share your valuable expertise and be at the forefront of promoting engineering among girls by speaking at local schools and careers events.

To sign up to our Register of Female Engineers, email us at: info@wes.org.uk

It's BACK bigger and better than before

National Engineering & Construction Recruitment Exhibition

24th and 25th April, NEC, Birmingham

The *National Engineering & Construction Recruitment Exhibition* offers plenty of opportunities for all engineering and construction professionals and graduates. Visitors will have access to the best industry recruiters and invaluable careers advice and job-seeking tools. Entry into the show is free of charge and highlights include: free careers advice lounge, CV consultation, professional development hub, free interview clinic and subsidised transport.

For more information visit: www.engineer.jobs.co.uk/engineering-exhibitions/spring-exhibition-2015?

Everybody Needs a Coach

Equate Scotland and WES Scotland hosted a joint event on 5th February at the IET, Glasgow on *Coaching and Mentoring for Success in Engineering*.

Marie Kane introduced the *Equate Scotland Coaching Programme* and Carol Marsh introduced the *WES MentorSET Program*.

Eileen Russell, head of engineering at ScotRail and Melanie Robinson a final year student at Edinburgh Napier University studying architectural technology provided inspirational talks on how coaching and mentoring respectively had helped them achieve their current goals in engineering.

Over 70 people attended the event which ended with networking over drinks and nibbles.



WES Student Conference enthuses and unlocks potential

BEING THE BEST YOU CAN BE

There isn't one engineering discipline that doesn't need you, was the message from Peter York of Selex ES to the eager attendees at the *WES Student Conference*.

Speaking at the event held at Aston University Conference Centre on 14th and 15th November 2014, he said: "There are fantastic careers in every single engineering discipline. You will be able to balance this with your home life and have the career you want."

He told the audience that his company pays above the national average for professional engineers with the average Chartered Engineer (CEng) salary being £63,000 according to recent Engineering Council statistics. "Supply and demand regulates what we will pay in the future and there's a shortage of engineers so wages will increase."

Of course monetary reward is not the only motivator and talking to an audience of 162 enthusiastic students and engineers from 27 universities, the presenters were keen to impress on delegates the many benefits a career in engineering can offer.

"As an engineer you have transferable skills," said Kam Perry also of Selex ES whilst Fiona Lewinton of Qinetiq said engineering "allows you to unlock your potential". As an operations director for the company's defence division she understands the possibilities. "There are large challenging problems that you can solve if you've got an engineering background." She told delegates to "seek to be significant not prominent" and passed on what she said was the single best piece of advice she had been given in her career – "take the opportunities that are offered to you."

JUGGLING

A recurring theme throughout the two days both from the podium and from the floor was the question of balancing a busy career with personal relationships and parenting. With two children and another on the way, Freda Muyambo of Transport for London said: "Managing your life is important. There is a desire to contribute to society and I have personal goals too but you find the time to do what you love."

Dani Strickland of Aston University has succeeded in having a varied career whilst bringing up children because she has understood her worth to her employers throughout the years. "I negotiated very good terms which included flexible working and extended holidays but if you do this you must also be prepared to be flexible too." Having moved to academia from industry she considered the differences such as the constraints of project completion time pressures backed by good pay in industry versus freedom for research, promotional opportunities and lower pay in the academic world.

Patricia Johnstone is a civil engineer with Arup where she has had a 29-year career covering many of life's changes. In a candid presentation she said: "You can't compete with 'stay at home mums' so don't volunteer to fill the cake stand, just buy generously from it. It is exhausting but juggling helps you practice organising and project management. I got good at delegating and being efficient so I could go home on time at the end of the day. I raised independent children, you could say benevolent neglect. I constantly felt guilty but when we were together I concentrated on spending time with them rather than worrying too much about whether their trousers were too short and needed altering. I still work four days a week

and most of my team, of which around 35 per cent are women, work flexible hours."

With 20 year's experience at Proctor and Gamble under her belt, Kim Pamplin was more than happy to pass on advice. "Learn what makes you happy," she told delegates. She said "You learn skills of how to balance family, work and hobbies - don't underestimate yourself."

The conference was organised across two days with keynote speeches and parallel sessions divided into: energy management and storage, innovation and creativity, aerospace and defence, communicating a specialism, personal presence, women of power and substance in the workplace, critical thinking, bioengineering and technology, robotics and autonomous systems, manufacturing and infrastructure projects.

Former WES President Jan Peters urged those attending to take advantage of the opportunity to talk to everyone present. "You need to learn how to talk to people, ask challenging questions and network."

This year's *Student Conference* will be held on 20th & 21st November at Aston University.

For more information on how to get involved with WES as a student visit: www.wes.org.uk/students

FUTURE AMBITIONS

Such was the impact of the conference that 2nd year chemical engineering student Rosey Deverall told *The Woman Engineer*: "I want to be the President of WES now."

The Aston University student bubbled with enthusiasm. "Today has been the first time that I have not been constantly checking my phone as today is so good and I think that is a really good habit to get into. I'm used to being a novelty as a girl on a chemical engineering course and I don't find it intimidating but it's really nice to be here with lots of other girls to see that there are more of us."

Rosey explained that she was always keen to pursue a science route and she chose chemical engineering to keep her options open. "I really like the reaction I get when I tell people I am studying engineering," she said. "I was worried WES would be about anti men but it is not like that at all. The women presenters are not like the 'Devil Wears Prada' stereotype you have when you think of successful women, they are more like me and my mum."

