

# Great engineers for a Great Britain

Ian Ling IEng FSOE FIPlantE MAPM took up the presidency of the SOE last month. Brian Tinham talks to the man, with engineering in his blood, behind the presidential address

## Key points

- You have been dependent on engineering from the moment you got out of bed
- People don't realise that, without engineers, we'd be living in caves. There is a lack of awareness of our utter reliance on engineers
- The dearth of the apprenticeships – the result of manufacturing cutting its costs – means fewer opportunities for training
- To encourage engineers, we have to give them a university fee reduction
- Engineers need to join professional institutions to obtain registration – that will give them, and the profession, the standing and recognition we need
- We need to encourage registration as chartered, incorporated or engineering technician to demonstrate independent verification

Ian Ling is the new president of the Society of Operations Engineers. He took up office on the occasion of the AGM at the Ironmongers Hall, London, on 28 June, after a year as president elect and, prior to that, honorary treasurer. As convention dictates, his first duty was to give the presidential address – the theme being the critical importance of engineering throughout society.

His impassioned conclusion: in order to encourage new blood into the profession, engineers must 'sell' their stories, tell people what they do and be active in the community, making the case for engineering careers. But what's behind the man and that address? What tone can we expect from this presidency?

Ling is at once genial, inquisitive and dogged, an old fashioned gentleman, one of life's most energetic and thinking doers, who likes nothing more than a challenge and a good chat, so long as it serves a purpose. He is also the personification of all that's good about plant engineering, rising to chief engineer early in a career that spans a wide range of sectors and, just as important, embraces practically every engineering discipline.

For him, that's one of the key values of plant engineering – it is uniquely multi-disciplinary. So, if you're seeking an interesting and rewarding vocation, his advice would be, look no further. "I've looked after mechanical, electrical, civil and process engineering, even instrumentation and control engineering. That's the fascinating thing about it. 'Plant' just isn't a big enough word: plant engineering allows you to get your fingers into everything," he enthuses.

"Where else can you expect to be responsible for specifying, project managing, installing, commissioning and maintaining everything from boilers and superheaters, to turbo hydraulics, high pressure compressors, air conditioning, filtration, refrigeration, freeze drying, sterilisers, autoclaves, solids and liquids handling, mechanical handling, palletisers and complete process plant?"

Where indeed? And where is the next generation of engineers, with the education, training and experience required to live up to that breadth of engineering? Ling comes from an age, sadly past,

when apprenticeships were common currency in industry and many learned their trade with the forces.

Ling joined the Royal Navy in 1944 as an engine room artificer apprentice, having passed his civil service commission entrance exam. He spent four years on-shore training at HMS Caledonia in Rosyth before going to sea on an aircraft carrier, responsible for engine room operations and the catapult machinery for launching Sea Vampire jet aircraft.

Still serving with the Navy, he moved back on-shore and was "taking a dead ship to Liverpool to oversee its refit" when a position came up on HMS Vanguard, last battleship of the line. "I remember, being an engineer artificer, running one of the engine and boiler rooms, and watching the steam turbines bouncing up and down because a main gear wheel had not been ground properly. At certain revs and some helm, it just went. It's quite frightening when you know there's 30,000 hp going through it," he laughs.

## Engineering in action

"Then I moved on to a destroyer in the Mediterranean in 1954 and was controlling two main engines when we were grazed by a light fleet aircraft carrier. We were on a convoy exercise when it rubbed up alongside and took out a lot of the superstructure. They were exciting times!"

In 1955, though, he left the military and joined the works engineering department of Allen & Hanbury (now part of Glaxo SmithKline) as an assistant engineer, installing and commissioning new production vessels, reactors and machines, while also working on energy utilisation projects at its HQ in Ware, Herts. "I was heavily involved with the steam side," he explains. "We had been firing CTF200 (coal tar fuel), but when the price rose too high, had to change to heavy fuel oil. So it was a matter of sorting that out and improving efficiency on a site that had seen a lot of history – so had steam mains all over the place, some poorly sized, inadequately insulated and the rest."

From the pharmaceutical sector, he moved to brewing in 1961, joining Watney Mann as chief

engineer at one of its then recent regional brewery acquisitions in Trowbridge. There he was responsible for installing a new high-speed bottling line and converting the maltings to a cold store for hops, before moving on to Watney Mann's Norwich brewery. "That was when they were expanding the King Street brewery to incorporate two other breweries – so bringing in fermenting vessels, kegging plant and so on. I oversaw an extensive project programme there."

But with liking challenges comes restlessness. So in 1977, when the opportunity arose, Ling took the chief engineer post at Albion Sugar in Woolwich, before being moved to its Tilbury operation to run up its new wet maize starch and glucose plant after commissioning. "We were milling maize brought in by conveyor straight from the docks on a continuous 24/7 processing plant, with explosion hazards, so it was interesting stuff. But then KSH, the Dutch owner, went bust, and Tilbury and Woolwich were bought by Cargill. When we suddenly lost a very big order, I and many others were made redundant."

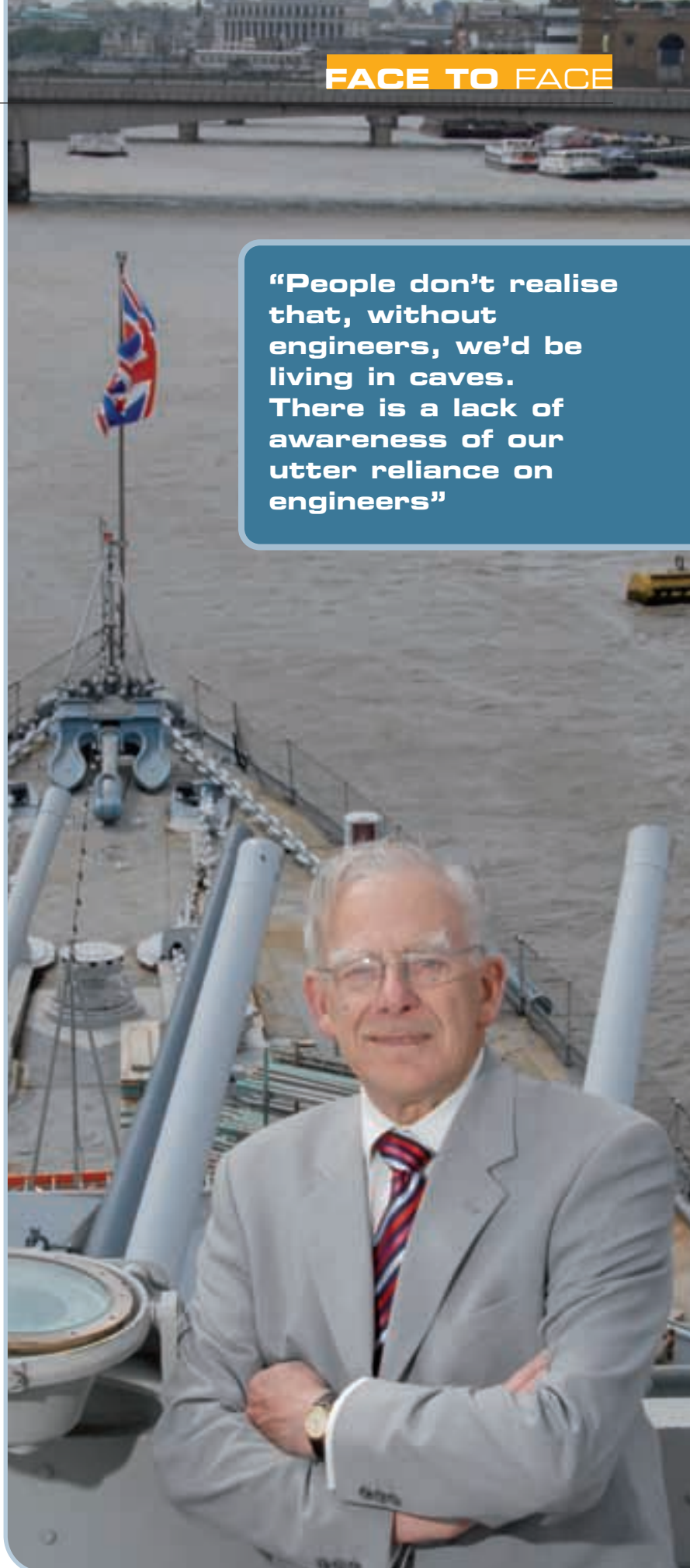
So he moved on to Smith & Nephew, again as chief engineer, at Romford, Harold Hill, and back into pharmaceuticals, as the site was preparing for plant redevelopment to meet the requirements of the then Medicines Act. "There, I was responsible for co-ordinating all the site upgrades while keeping the operation running. It was like Chinese chequers and it took a lot of thought, particularly since, at the same time, we expanded one of our processing lines."

But that done, before retiring Ling found his next challenge at Bio Products Laboratory in Elstree, just as the NHS was preparing to stop buying blood products from the US due to contamination fears. "So I was responsible for putting into production a new unit to treble throughput," he explains. Yet again, the job was about pulling together disparate engineering talent on a large estate, and project managing the building and commissioning of further laboratories and facilities that completed the NHS human blood fractionation plant – and, this time, also taking process control and instrumentation under his wing.

### **Backbone of society**

You get the picture. For him, broad-based engineering has been a life-long passion. He sees it not only as critical to wealth creation, nor just as central to the survival of society, but as one of the most engaging and worthwhile vocations on the planet. And so back to that presidential address.

"For centuries, engineers have been the backbone of society and the means by which the world has progressed," he said, walking his listeners through a sequence of engineering history. From the Romans, through the Norman invasion



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**“Government strategy is to get 50% of students into our universities. But real engineering is a rigorous degree and, to become a chartered engineer, you need a four-year course. So they take easier options”**



and the Middle Ages to Leonardo DaVinci, with his concepts for helicopters, tanks and solar power, engineers have driven development and been recognised for their worth, he insisted.

“In the 18th century and into the 19th century came the Industrial Revolution and we recall engineers such as Hargreaves, Arkwright, Watt, Stephenson, Telford, Brunel, Otto and Whitworth. Then, in the first half of the 20th century, we recall Sidney Camm, RJ Mitchell, Nigel Gresley and Frank Whittle, but few stand out in the latter half. And when we reach the 21st century, do the names of engineers come to mind?”

He concedes that, today, engineering is a team effort, less likely to be credited to charismatic individuals. But his concern is that, without recognition, engineering itself becomes invisible. And when that happens, despite engineering achievements like the Millennium Bridge and the Gherkin building, both in London, society forgets its

dependence on engineers, and engineering ceases to be perceived as an attractive career choice. Which could spell disaster.

“The Olympics will require a large number of engineers in design, construction, fit out, supply of services, power, water, drainage, transportation and ancillary items. At the same time, various rail projects are mooted – Crossrail, the Docklands railway extension, the creation of St Pancras International, all of which depend on engineers. Building new nuclear generation capacity is also envisaged – again requiring many engineers. And there’s continuing upgrade of water services, effluent disposal, electrical distribution.

**Shout about it**

“Unless we recognise that we are unnoticed and take steps to promote the profession, we are in danger of having no engineers... Only now are we beginning to see modern apprenticeships emerge again and universities providing a wider range of engineering courses leading to degrees. But students have to be made aware of what engineering is and what it has to offer, in terms of excitement, job satisfaction, and the breadth and depth of the discipline. Otherwise they will not choose to pursue these courses.

“Further, without a healthy engineering populace, UK plc will fall behind the world. Even now, China and India are producing more qualified engineers than the UK, and companies are having to recruit from these sources. At the SOE, we are welcoming dozens of engineers based in Hong Kong and China into membership and, as SOE’s president, I will be visiting China later this year to meet some of them in person.

“If you take away one thought from this, let it be that we must ‘sell’ ourselves. We must ensure that there is a steady flow of talent into our profession: that today’s young people see engineering as a rewarding and satisfying career.” **IEE**

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