

A SHORT APPRECIATION OF THE LIFE AND ACHIEVEMENTS OF JAMES WATT

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Scottish Parliament, 19th January 2016 (Watt's 280th birthday celebration)

Minister, sincere thanks for these words and for being with us this evening in this celebration of Watt. Ladies and gentlemen, my role this evening is to say something about the significance of what James Watt achieved, and the lessons for us from his life. I see absolutely no conflict in speaking about the past as a Professor of Future Infrastructure because if we fail to understand the past, we will also fail in our designs for the future. Engineers today stand on the shoulders of giants and James Watt has rightly earned his place in the pantheon of the greatest.

By the time James Watt was set the challenge to repair the University of Glasgow's model Newcomen engine it was already more than 50 years since Savery's patent and Newcomen's later adaptation. 50 years of the lumbering, inefficient, ponderous slow, pumping engines that had populated coal mines and tin mines to pump out water. They worked, but many great engineers before Watt had tried to improve their efficiency and only had marginal impact.

Watt succeeded at the age of 29, where older and more experienced engineers had failed. We tend to think of Watt as he appears in this portrait, middle-aged – but his great breakthrough was made in his twenties. He was a young Turk who showed his elders how to do it. The addition of the separate condenser more than doubled engine efficiency. It was a phenomenal act of genius: a huge benefit to fuel conservation, a huge increase in potential power output, opened the door to rotary power for mill machinery that caused a step change in the industrial revolution and gave Britain fifty years head start in industrialisation and economic growth over the rest of the world. His idea was *that* big.

And it was recognised in his lifetime. There are statues to Watt in Westminster Abbey, Birmingham, Leeds, Glasgow, Edinburgh, Manchester, Oxford, even in Budapest. He was recognised worldwide as the most useful man who ever lived. Which still leaves scope, minister for even MORE useful women.

But because it all happened 250 years ago, it's difficult to relate to the scale of the

achievement. But think of a 1910 *Model T* Ford becoming an Aston Martin DB9 without the years of incremental development. Think of the Wright Brothers' *Flyer* becoming a Spitfire virtually overnight. Think of Stephenson's *Rocket* becoming the *Flying Scotsman*. Such was the gap between the Newcomen engine and the Watt engine.

And because it happened 250 years ago, we are also in danger of forgetting his achievement and contribution to our civilisation. National Geographic recently listed the 100 events that changed the world. James Watt's steam engine is one of them. As are five other Scottish inventions by the way - a hugely disproportionate contribution from a nation that had about 0.2% of world population in Watt's time.

What should we learn from Watt's great life?

Firstly: He was young, still in his twenties, when he had his flash of inspiration. But he'd been educated well in his formative years, and had then motivated himself to push the boundaries of his knowledge. Without a solid education system that encourages science, technology, and design, we won't nurture the potential Watts of the future.

Second: He was close to the university network. His workshops were in Glasgow University, and he had supporters and contemporaries in Edinburgh University. They helped him, encouraged him, stretched his horizons, and that synergy between universities and industry needs to be encouraged and developed today. If Scotland is to make an impact on the world, it's a much bigger challenge with only, now, 0.07% of the world population. We need all the talents working to a common aim.

Third: He established a partnership with businessmen who saw the potential of what he had achieved: first Roebuck, then Boulton. Very often, getting that perfect match of entrepreneur and genius is the most difficult challenge of all. Rarely do they come in one package. Watt was described as a man "assailed by self-doubt". If anyone doubted his Scottish credentials look no further! He needed a business partner. We need to encourage the right conditions for these collaborations to develop the opportunities that genius creates.

Fourth and finally: As the Minister said, Watt was an inspiration in his lifetime. He showed the world what inventiveness and engineering can do. And today we need many more young engineers to follow his example. There are plenty of problems to

solve. There are plenty of challenges facing us today. We need to show aspiring young people, using James Watt as the archetypal role model, the excitement of engineering. Just as one young man changed the world in 1765, another young engineer might save the planet today.

I hope she does and that she was educated in Scotland. The fact that Watt's a Scot gives us an extra incentive and responsibility to use him here in Scotland as an inspiring role model.

Minister, ladies and gentlemen, many organisations have come together to make this evening happen. Historic Environment Scotland, Friends of Kinneil, STICK, IESIS, Universities of Heriot-Watt and Glasgow, National Museums Scotland, SCDI, Scottish Maritime Museum, Falkirk Community Trust, Inverclyde Council, Scottish Industrial Heritage Society, the Association for Industrial Archaeology, Young Engineers and Science Clubs Scotland, all of them mentioned in the handout; and also the Scottish Parliament Events Team and events assistants who have been looking after us so well. Many of the supporting organisations have engineering at their core and for many James Watt is close to their hearts. I hope tonight is the start of a process of revival of the memory of James Watt, in understanding and revering his achievement, and especially in regenerating an appreciation of the true worth and value of engineering to our civilisation – and perhaps even our survival.

Angus recommended we have a James Watt alternative to the Burns Supper. Well, IESIS, an organisation close to my heart, can go one better than that. IESIS hosts the James Watt Dinner in October each year at which new inductees to the Scottish Engineering Hall of Fame are announced. Come and join us this year and continue to celebrate our very FIRST inductee, the man himself, James Watt.

Minister, ladies and gentlemen, we should remember and revere James Watt, but I would like to finish by proposing an alternative toast:

Watt of the future!

Thank you.