

Ernest and the summer of 1937

Ernest had enjoyed the summer break at Chantry Cottage in Wiltshire. He believed in working hard during the University year, then getting away for a few weeks and relaxing. Each day started with a leisurely breakfast, reading the “Times” and the “Manchester Guardian”. Later there would be walks in the countryside, helping May with gardening and trimming trees. Ernest liked to read novels at such times and talk with friends he had invited to stay. The only “work” he had brought was the task of preparing a speech he was to give a science conference in India. He had never been to India and was looking forward to the trip in November.

In preparing the speech Ernest found himself reflecting on things past, present and future. And the future was starting to look a bit scary right now. Just four months ago, German and Italian planes bombed the town of Guernica, during the Spanish Civil War. Up to 1650 civilians were killed. Ernest was outraged that planes were being used to bring death and destructions to civilians. The artist, Picasso had produced a painting *Guernica* showing the suffering and tragedy of war. Ernest had publicly urged the banning of military planes.



As well there was Hitler’s treatment of the Jews and others in Germany. In 1933, barely two months after Hitler came to power a law was passed meaning that Jews and political opponents could not serve as teachers, professors, judges, or other government positions. In October 1933 Ernest spoke to 10,000 people in the Albert Hall in London seeking help for German refugees, with Albert Einstein present. As President of Academic Assistance Council, Ernest was pleased that they had managed to find refuge and work for over 1100 academics. Still, he was worried about the possibility of another war.

He was top of the tree now and feeling his age. His mother had died two years ago at the grand old age of 92 years. When he was made a Lord, he telegraphed her telling her it ‘was more her honour than his’. He had owed much to her and when news of her death arrived he would sit, lost in thought, staring into space. New Zealand seemed such a long way off and he had not visited there since 1925. Perhaps when he retired in 1941 once he turned 70.

Discussion questions

- 1) What were Ernest’s thoughts on work and holidays?
- 2) The 1930’s were called the “gathering storm”. Give examples of what this meant.
- 3) Would Ernest have been able to go to his mother’s funeral? Why?

The 1920's had been a quieter time on the science front. He had found that using alpha particles from radium had taken his research about as far as it could go. A new approach was needed and he led the way during the 1930's. Even the Americans conceded that he had won the race to split the atom and discover the neutron. Under his direction two young scientists, John Cockcroft and Ernest Walton started making particle accelerators that used hundreds of thousands of volts to smash protons into the nucleus of atoms such as lithium.

Seventy years later a 27km circular tunnel costing \$6 billion would be built underneath the Swiss and French border. It too was a particle accelerator. Following Ernest's original idea it would smash protons and neutrons into each other to see what happened in the big bang. Good ideas stand the test of time.

When Ernest and his team released news of their successful experiments the newspapers had bold headings

Science's Greatest Discovery

The atom split at 100,000 volts

Secret of the Cambridge laboratory

Making a new world

Energy without limit

The idea of unlimited energy was exciting; it would make power stations that used coal obsolete and ancient. There was so much energy holding the nucleus together. Someone had done the maths. They worked out that all the electricity generated in the United Kingdom could be produced by using 5 tons of Uranium instead of burning 18million tons of coal. The scary side of this unlimited energy was that it could be used to make a bomb. Could people who used chemistry skills to make poison gas to kill people be trusted not to make an atomic bomb wondered Ernest. Unlimited energy and unlimited destruction did not appeal.

Most people still did not believe it was possible to release this energy. Einstein had said that "It would not be practical. It would be like a blind man in a dark night hunting ducks by firing a shotgun straight up in the air in a country where there are few ducks". Ernest also had his doubts, but couldn't get away from the feeling that one day this would be very important. This feeling was also called intuition, an instinctive knowing. For Ernest this was important.

Discussion questions

- 4) Is there an example of Ernest's ideas still being useful?
- 5) What does splitting the atom mean?
- 6) What was Einstein really trying to say?
- 7) When was the energy of the nucleus released and what happened?

The 1930's had been the best of times, the worst of times. How does one top being made a Lord? Now Ernest, Lord Rutherford or Nelson. As well his predictions about the neutron were found to be true and the atom had now been split. He had gathered a group of scientists and friends round him who were world leaders in their fields; Cambridge was the place to be. People like James Chadwick, Patrick Blackett, John Cockcroft, Ernest Walton, Mark Oliphant and Peter Kapitza. The list went on. Many of these went to win that holy grail of science, the Nobel Prize.

There was a downside. In 1930 daughter Eileen had presented Ernest with his fourth grandchild and then died of a blood clot a few days later, just two days before Christmas. She was just 29 years old. May was over in New Zealand and could not be with him. Most of the scientists who had worked with him had left to become professors themselves at other Universities. Cavendish Laboratory at Cambridge had become a victim, of its own success. The new “big science” was going to require “big” money. The laboratory itself was now old and crowded and in need of redevelopment.

Ernest never made it to India. After returning to Cambridge from his summer break he didn't feel well. He died on October 19th, 1937 after an operation to treat a strangulated hernia was unsuccessful. Many tributes were made to him. The New York Times wrote of Ernest

‘It is given to few men to achieve immortality, still less to achieve Olympian rank, during their own lifetime. Lord Rutherford achieved both. In a generation that witnessed one of the greatest revolutions in the entire history of science he was universally acknowledged as the leading explorer of the vast infinitely complex universe within the atom, a universe that he was first to penetrate’.

Discussion questions

- 8) In what way were the 1930's the best of times?
- 9) In what way was the 1930's the worst of times?
- 10) How would we put what the New York Times was trying to say in simple terms?