



***BRITISH INFLUENCE IN THE GLOBAL
DEVELOPMENT OF SCIENCE***



- to poke out – виглядати, висовуватись;
- virtually ['vɜ:tʃʊəlɪ] – фактично, практично;
- human endeavor [m' devə] – людська діяльність;
- motion – рух;
- gravity ['grævɪtɪ] – сила тяжіння;
- DNA – ДНК;
- application [plɪ'keɪʃ(ə)n] – програми;
- persued by people – проведені людьми, «переслідувані» людьми;
- controversial [kɒntrə'vɜ:ʃ(ə)l] – спірний, дискусійний;
- regard to – щодо, відноситись до;
- to lay the foundation - закладати фундамент;
- force – сила;
- the forces acting upon[ə' pʊn] - сили, що діють на ;
- influential [ɪnflʊ'ɛnʃ(ə)l] – впливовий;



- in response to – у відповідь ;
- polymath ['pɒlɪmæθ] – ерудит;
- via ['vaɪə] – через;
- immense [ɪ'mens] – величезний, колосальний;
- cargo ['kɑ:gəʊ] – вантаж;
- vicinity [vɪ'sɪnɪtɪ] – навколишній район, прилеглий район;
- directly [d(a)ɪ'rektlɪ] – відразу, негайно;
- simultaneously [sɪm(ə)l'teɪniəsli] – одночасно, синхронно;
- audible ['ɔ:dɪb(ə)l] – звуковий;
- the incandescent light bulb – лампа розжарювання;
- relativity [relə'tɪvɪtɪ] - теорія відносності;
- equation [ɪ'kweɪʒ(ə)n] – рівняння;
- subsequent ['sʌbsɪkwənt] – наступний, подальший;
- breakthrough ['breɪkθru:] – прорив;
- citation [saɪ'teɪʃ(ə)n] – цитування, посилання (на автора);

7 British Inventions

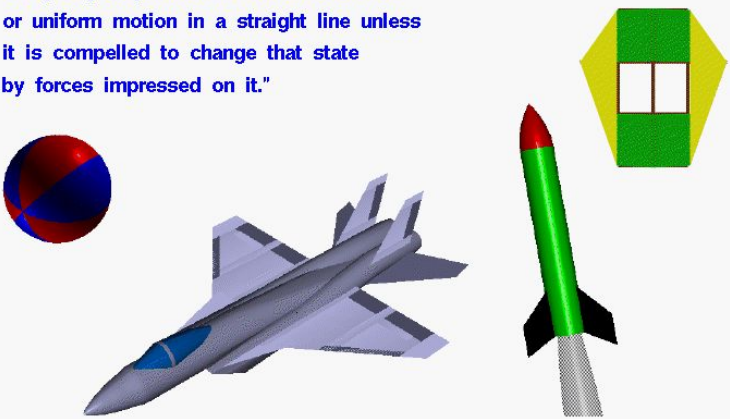
The background features a gradient from light green at the top to dark blue at the bottom. It is decorated with faint, semi-transparent technical diagrams, including circular gauges with numerical scales (e.g., 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200) and various circular patterns with arrows, suggesting a theme of engineering or technology.

NEWTON'S LAWS





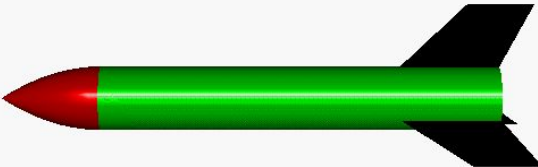
 **Newton's First Law** 

"Every object persists in its state of rest or uniform motion in a straight line unless it is compelled to change that state by forces impressed on it."



The slide features three illustrations: a sphere with red and blue hemispheres, a grey fighter jet, and a green rocket with a red nose cone and black fins. To the right of the rocket is a green hexagonal shape with two white rectangular windows.

 **Newton's Second Law** 
Definitions





A green rocket with a red nose cone and black fins, shown in profile.

Differential Form: Force = change of momentum with change of time $F = \frac{d(mv)}{dt}$

or:
Force = change in mass X velocity with time $F = \frac{(m_1 V_1 - m_0 V_0)}{(t_1 - t_0)}$

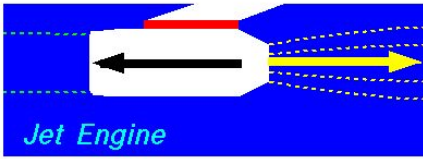
With mass constant: Force = mass X acceleration $F = m a$

Force, acceleration, momentum and velocity are all vector quantities.
Each has both a magnitude and a direction.

 **Newton's Third Law** 
Applied to Jet Propulsion

For every action, there is an equal and opposite re-action.

Exhaust Flow Pushed Rearward

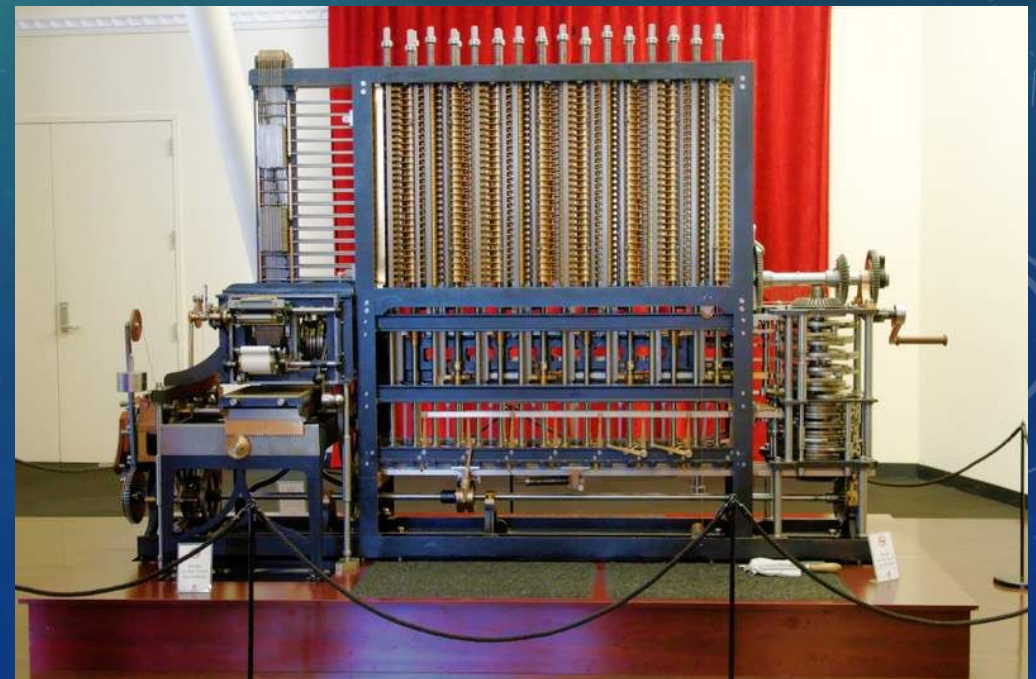
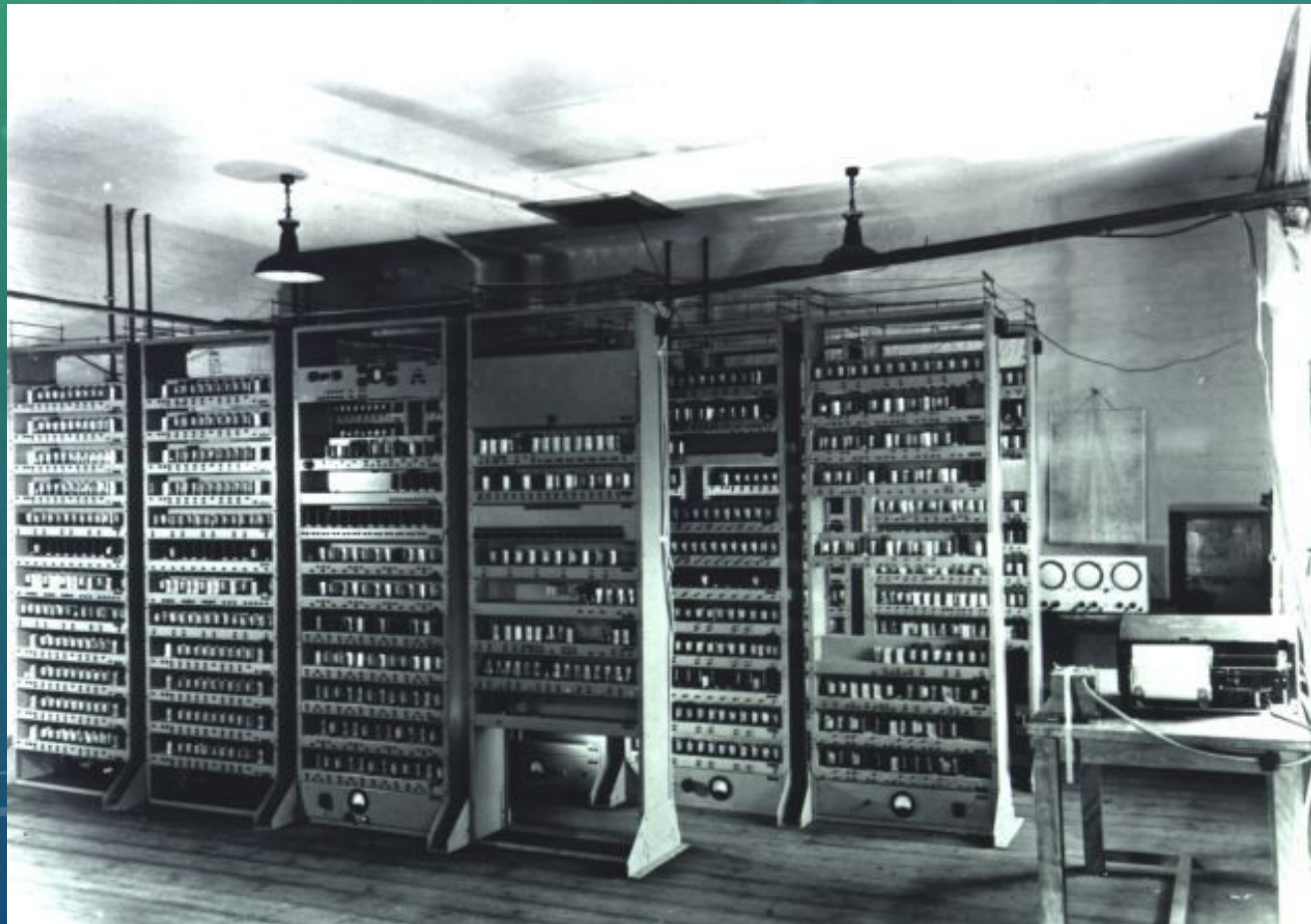
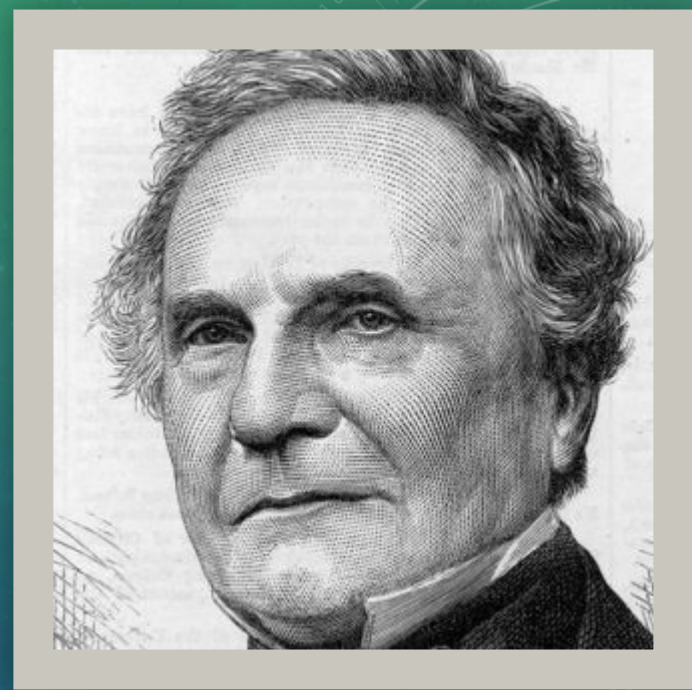


The diagram shows a jet engine with a black arrow pointing left from the engine and a yellow arrow pointing right from the exhaust. Dashed lines represent the exhaust flow.

Jet Engine

Engine and Aircraft Pushed Forward

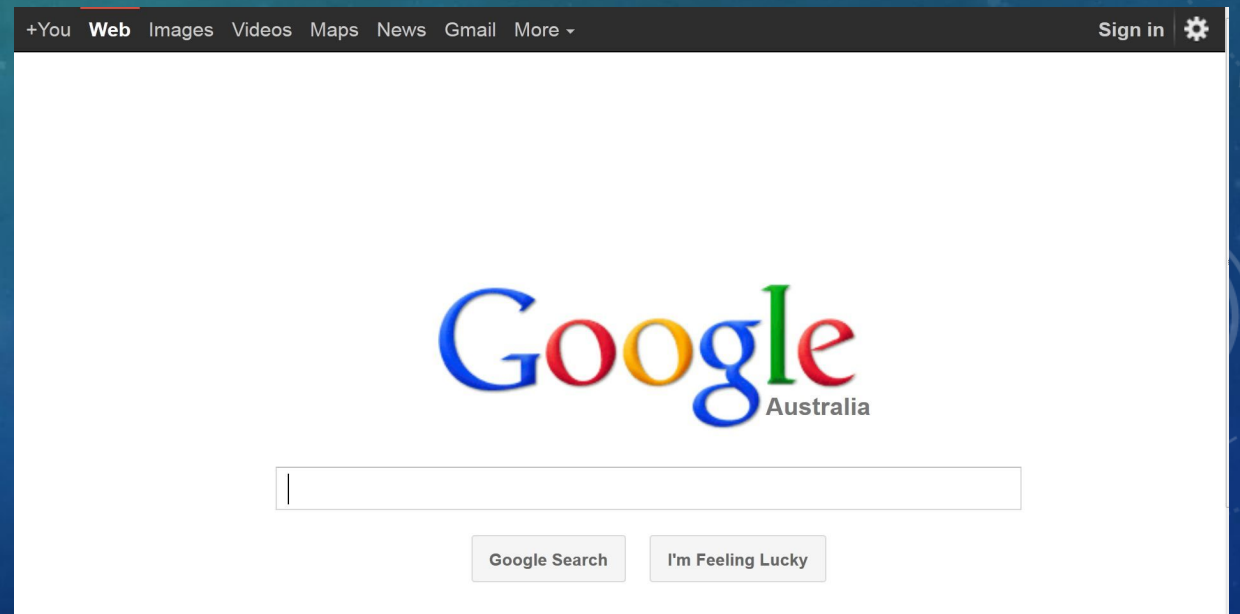
PROGRAMMABLE COMPUTER



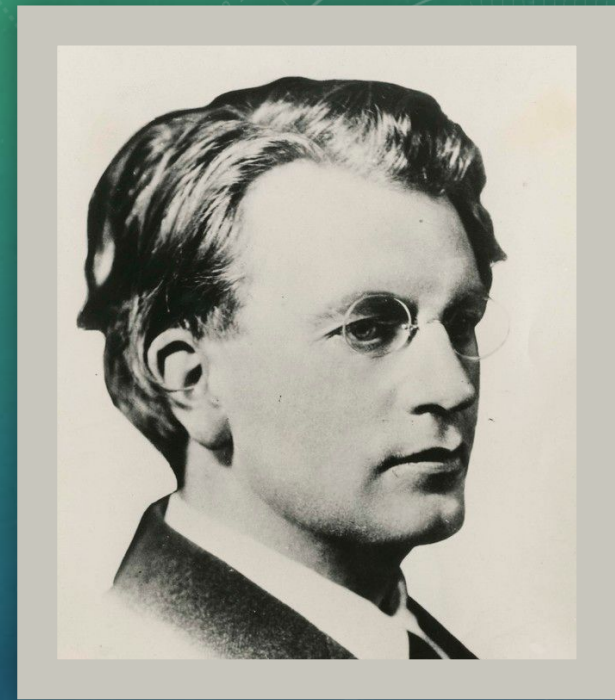
WORLD WIDE WEB



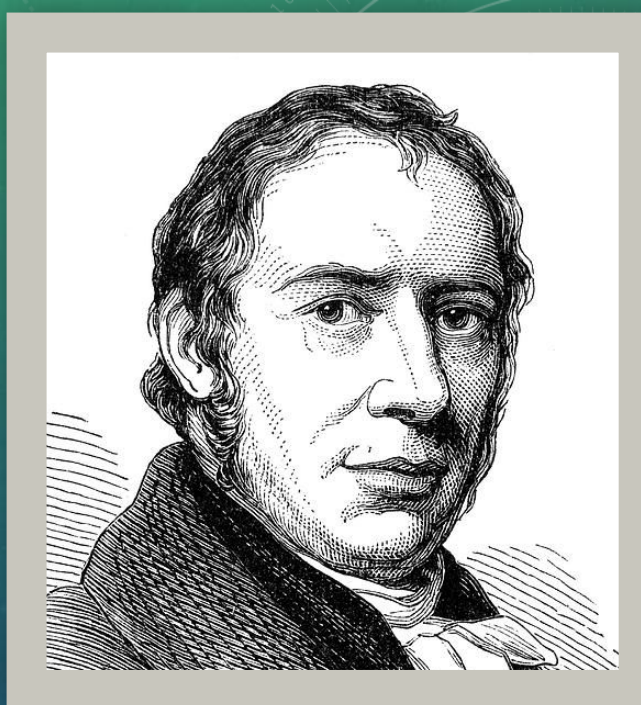
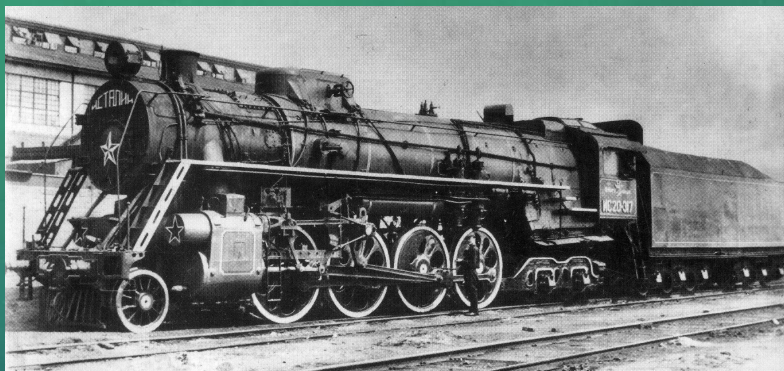
YAHOO!



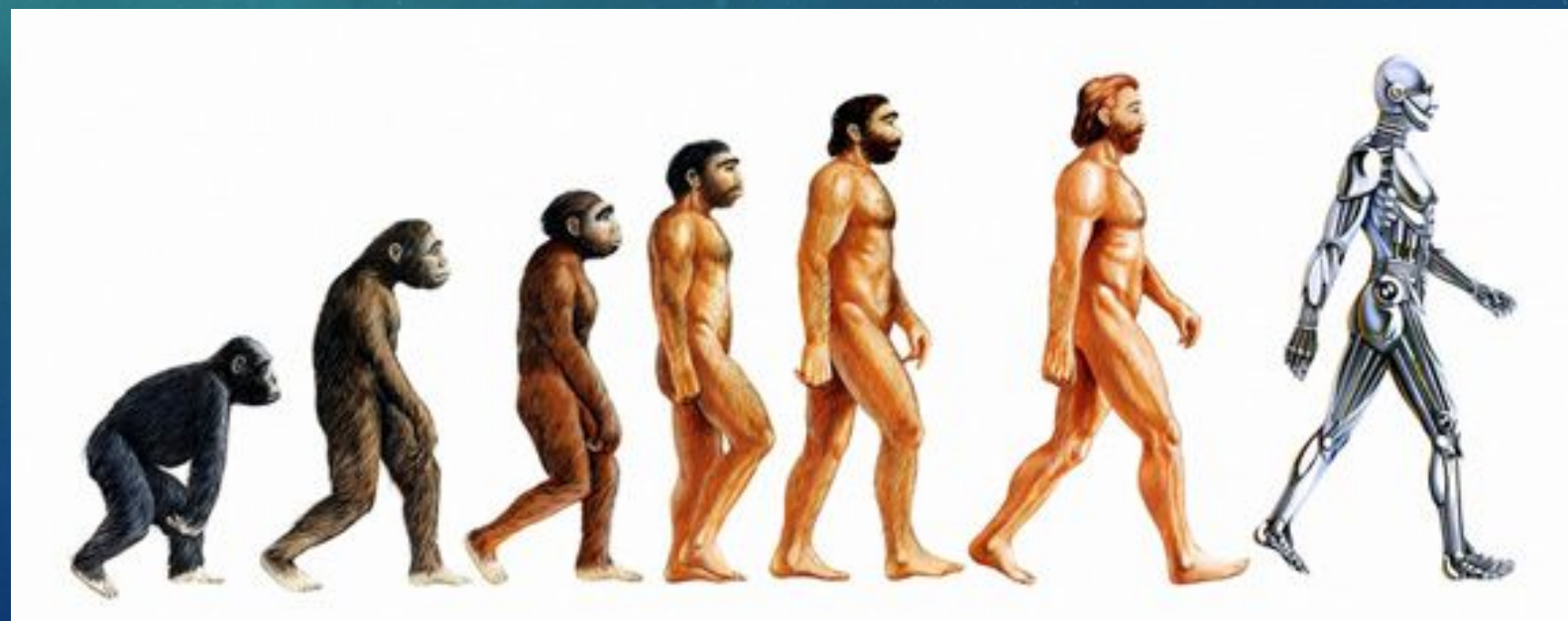
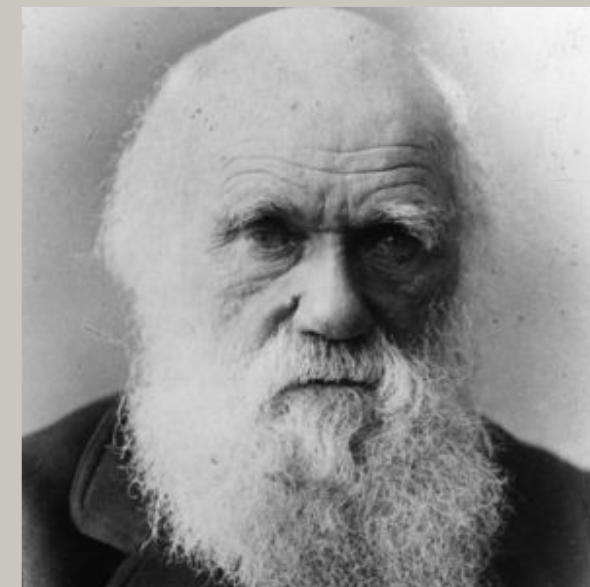
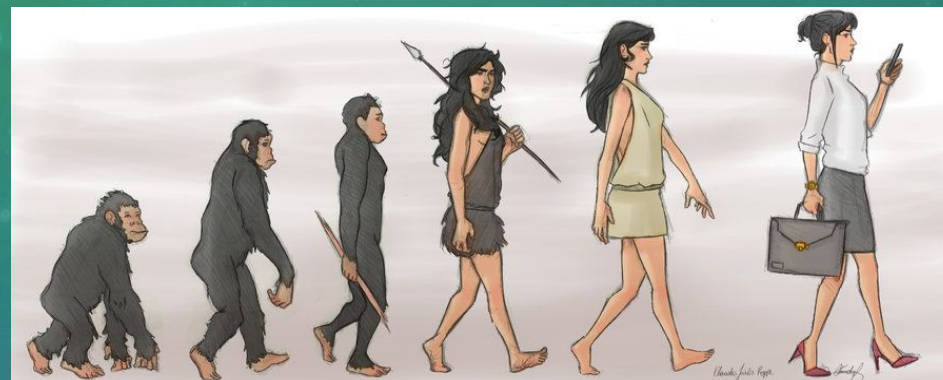
TELEVISION



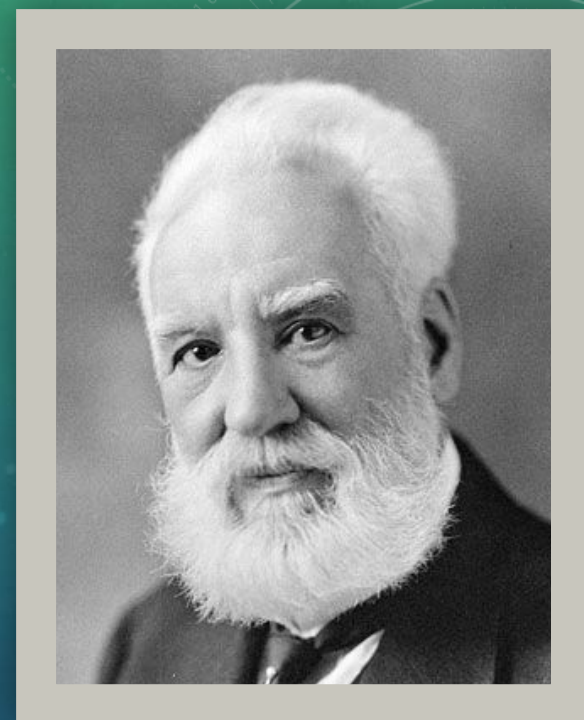
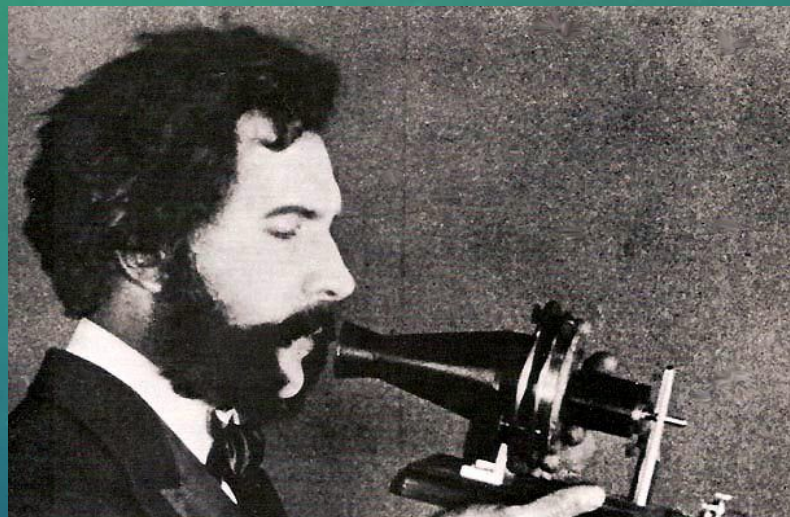
STEAM LOCOMOTIVE



THEORY OF EVOLUTION



TELEPHONE



IMPORTANT ADVANCES MADE BY PEOPLE FROM THE UK

- *There are many others major theories, discoveries and applications advanced by scientists from the Great Britain.*

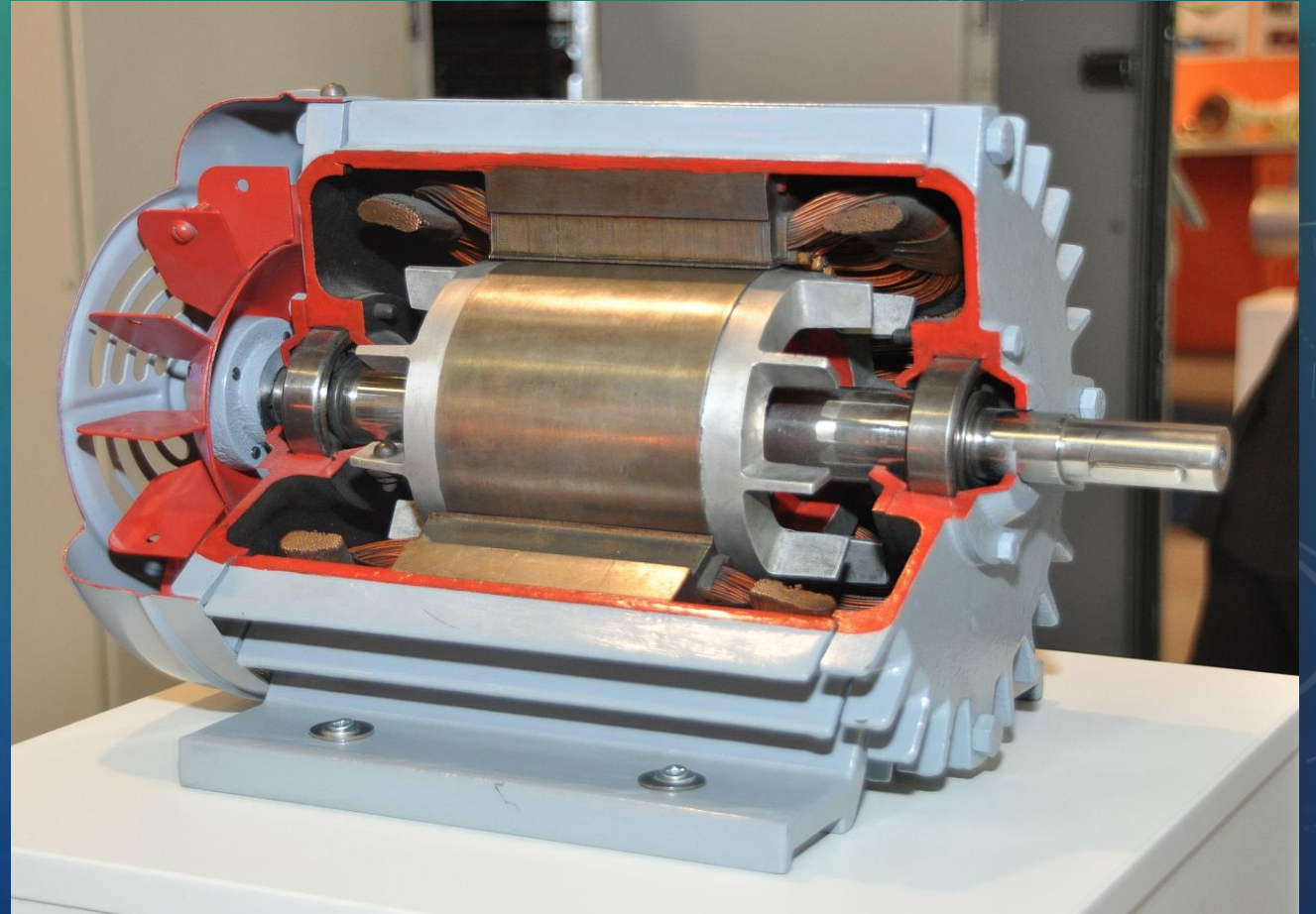
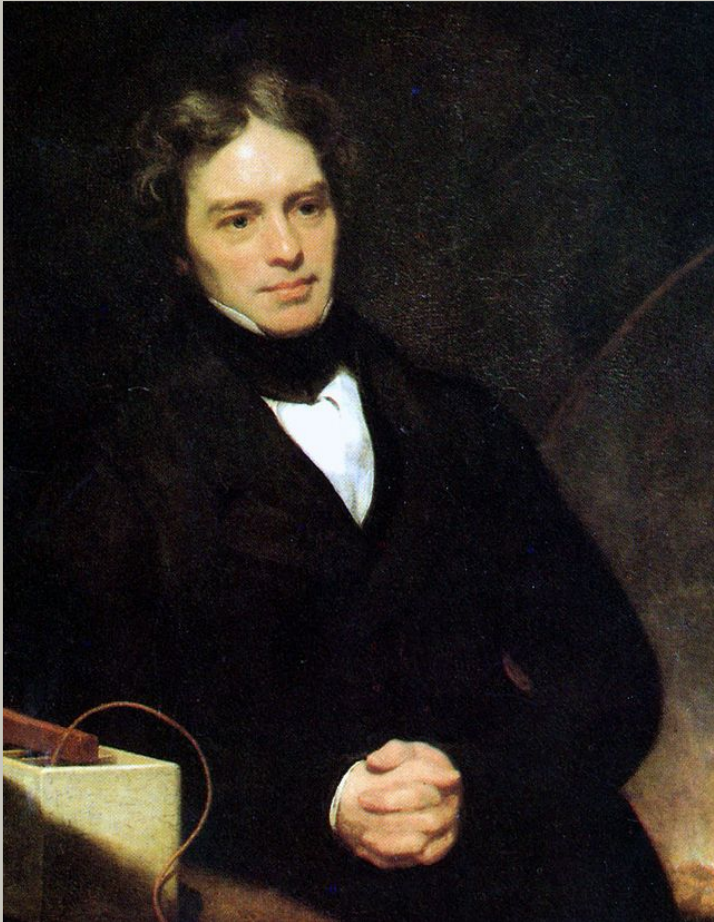
*The discovery of hydrogen, by **Henry Cavendish** (1731–1810).*



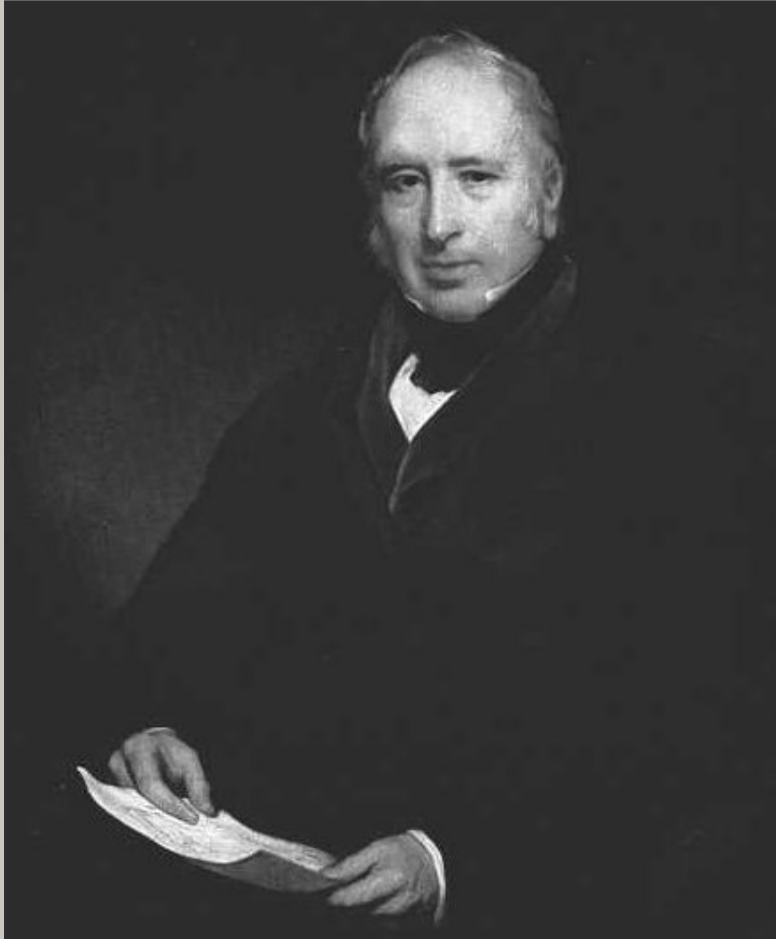
H. Cavendish



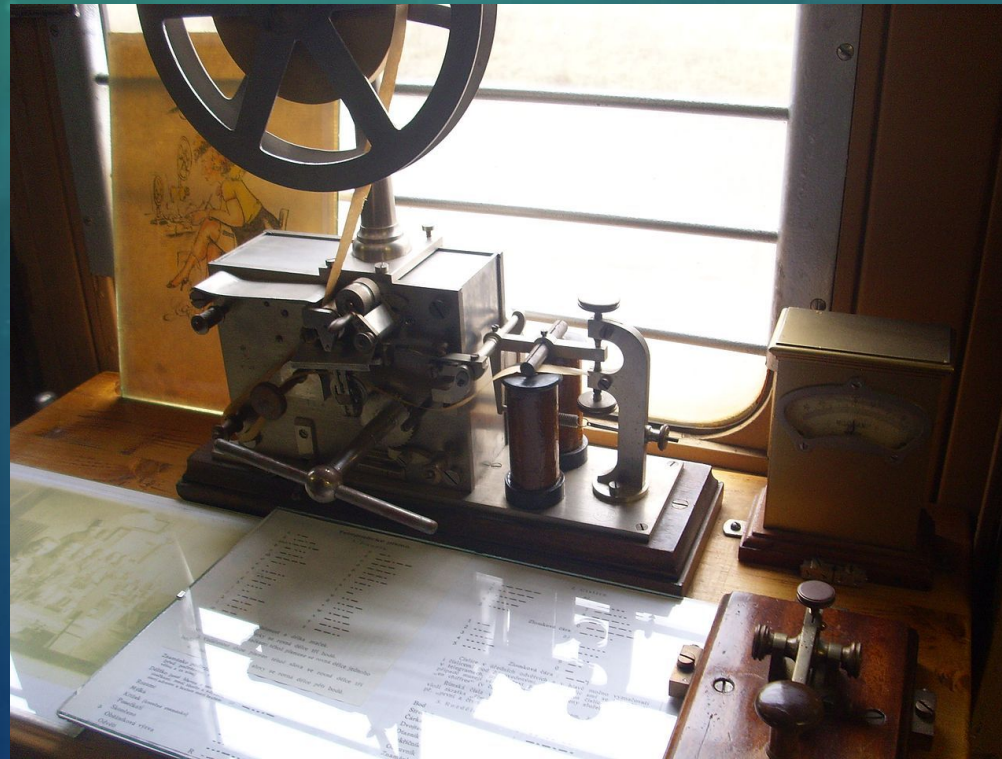
*The electric motor, by **Michael Faraday (1771–1867)**, who largely made electricity viable for use in technology.*



*The theory of aerodynamics, by **Sir George Cayley** (1773–1857).*



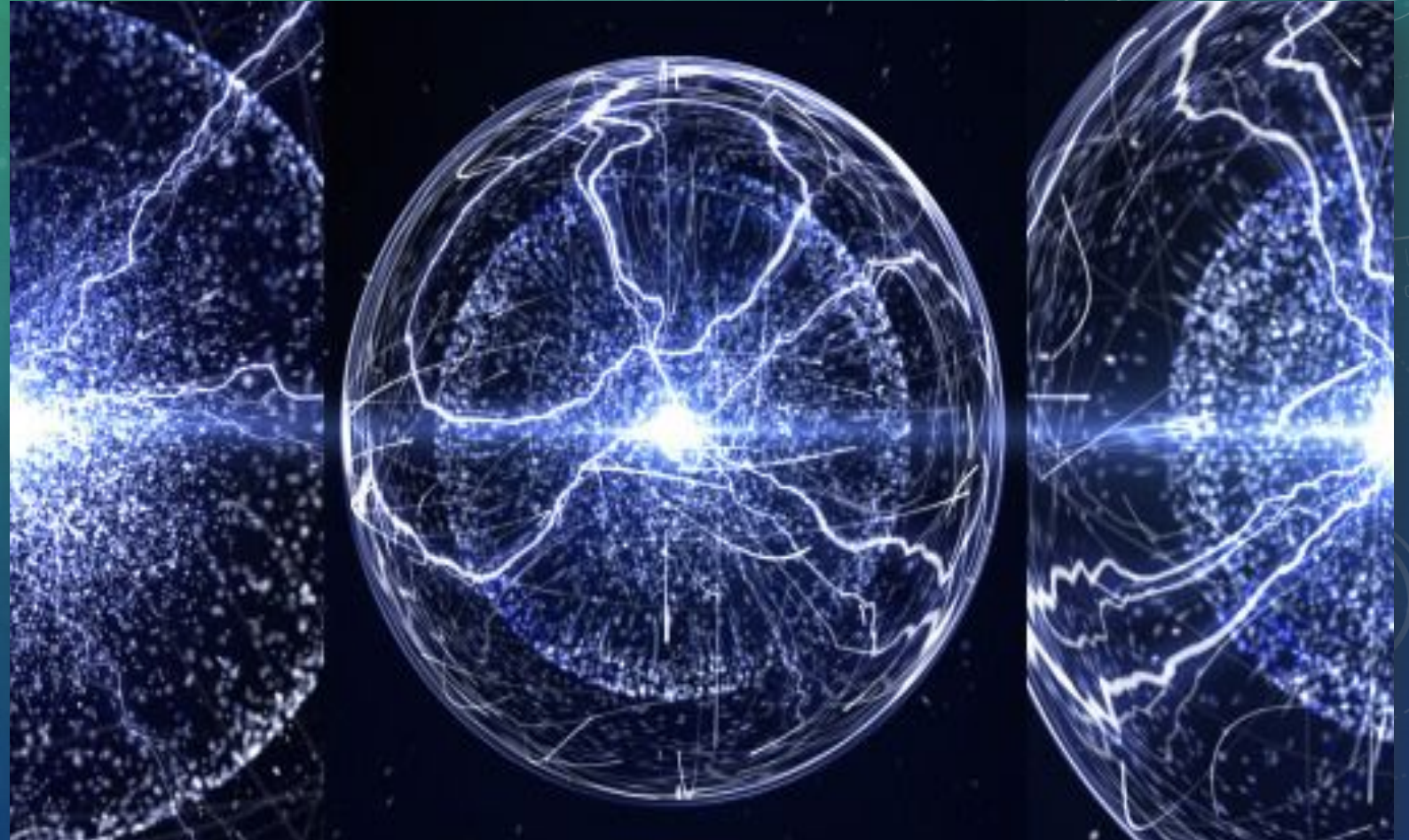
*The first commercial electrical telegraph, co-invented by **Sir William Fothergill Cooke (1806–79)** and **Charles Wheatstone (1802–75)**.*



*The invention of the incandescent light bulb, by **Joseph Swan** (1826–1914).*



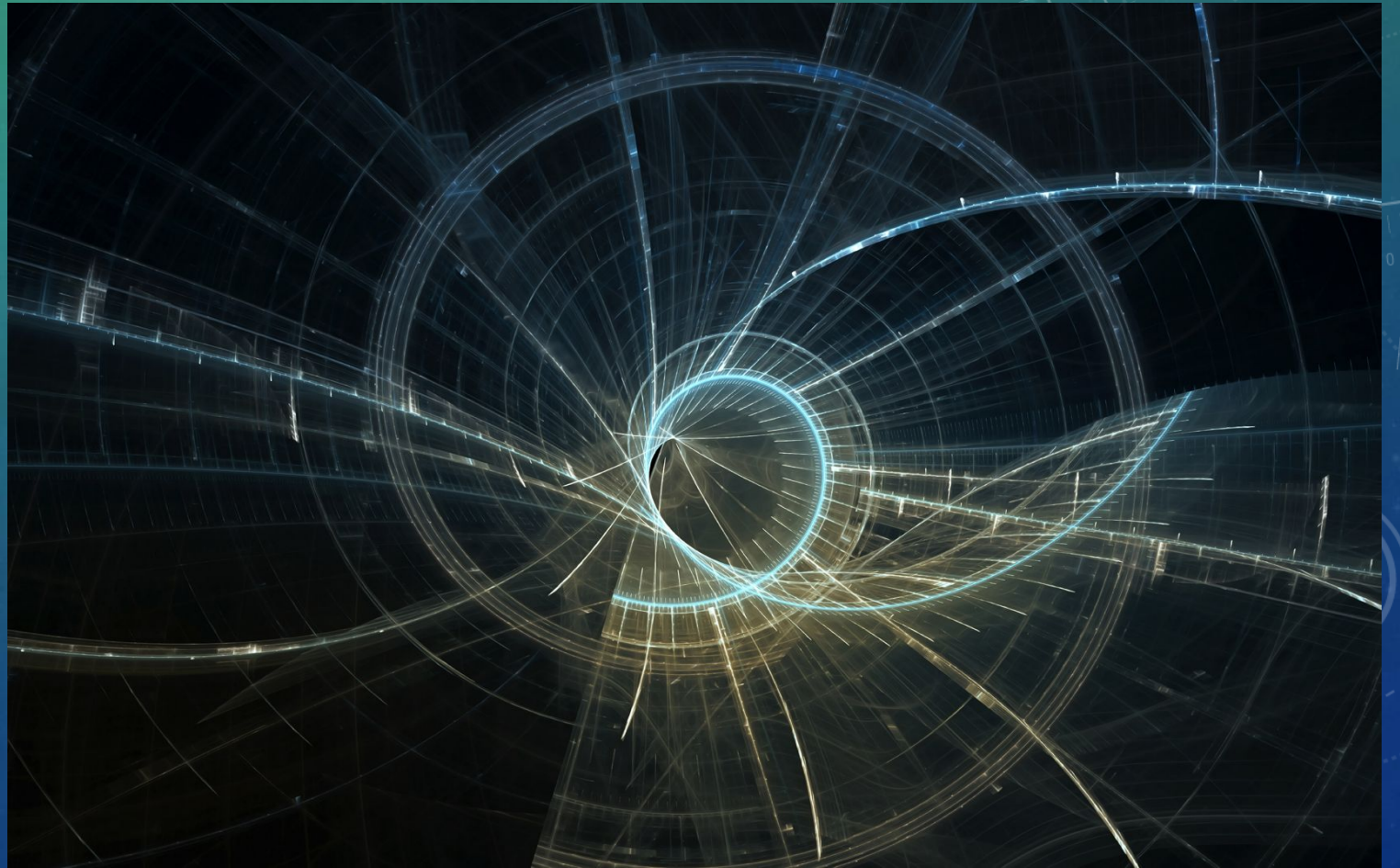
*The unification of electromagnetism, by **James Clerk Maxwell**
(1831–79).*



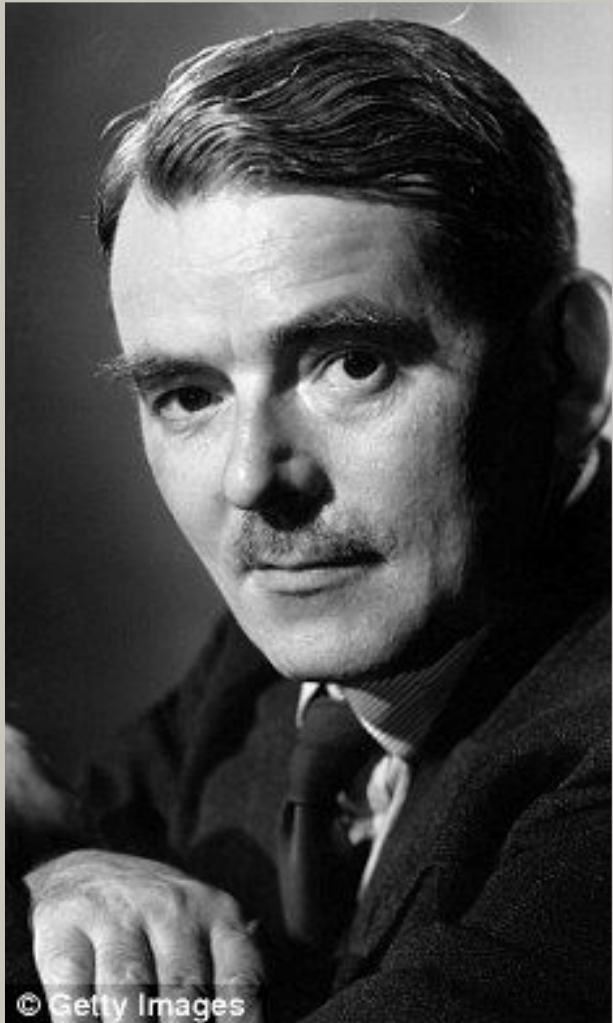
*The discovery of penicillin, by biologist and pharmacologist, **Sir Alexander Fleming** (1881–1955).*



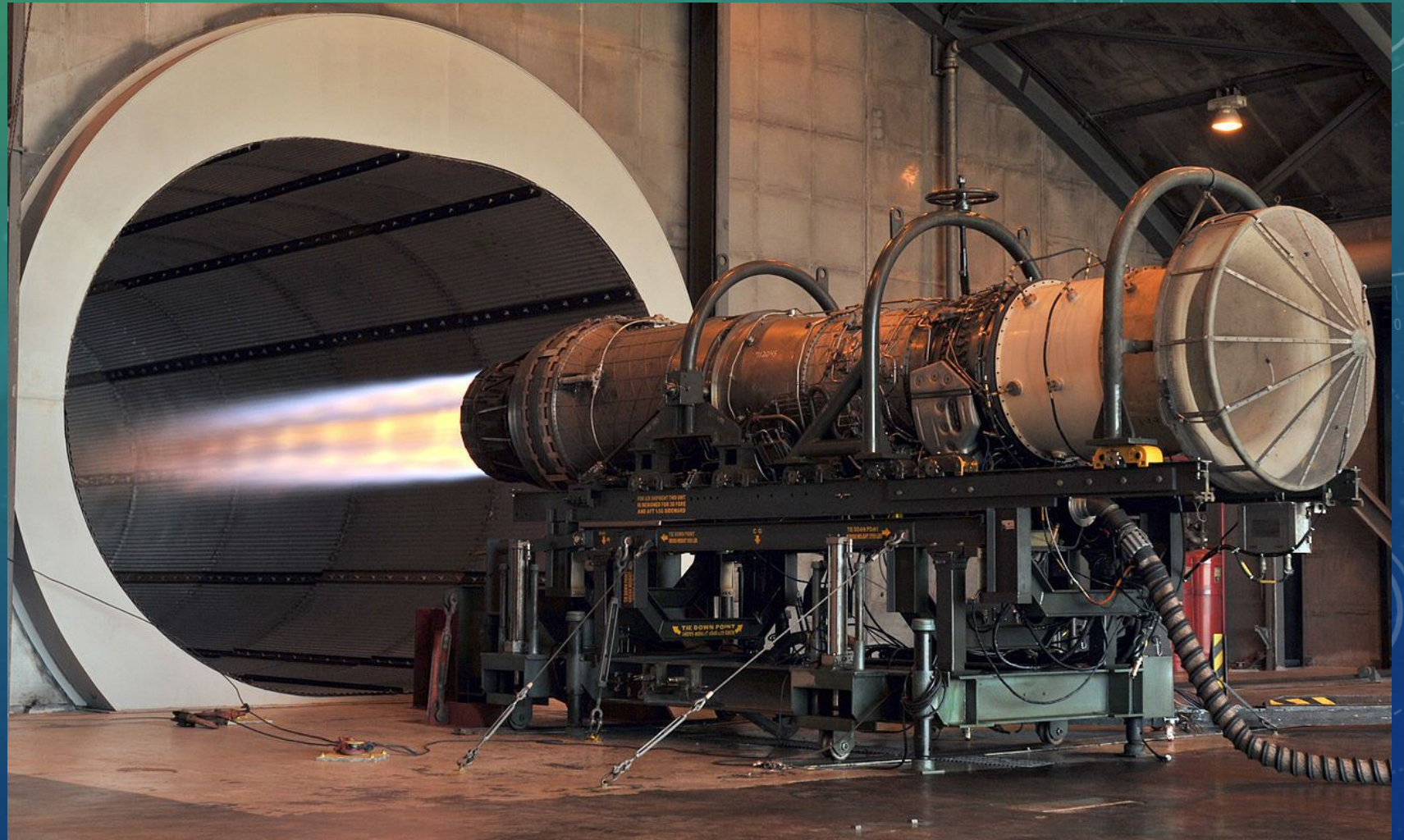
*The first meaningful synthesis of quantum mechanics with special relativity by **Paul Dirac** (1902–84) in the equation named after him, and his subsequent prediction of antimatter.*



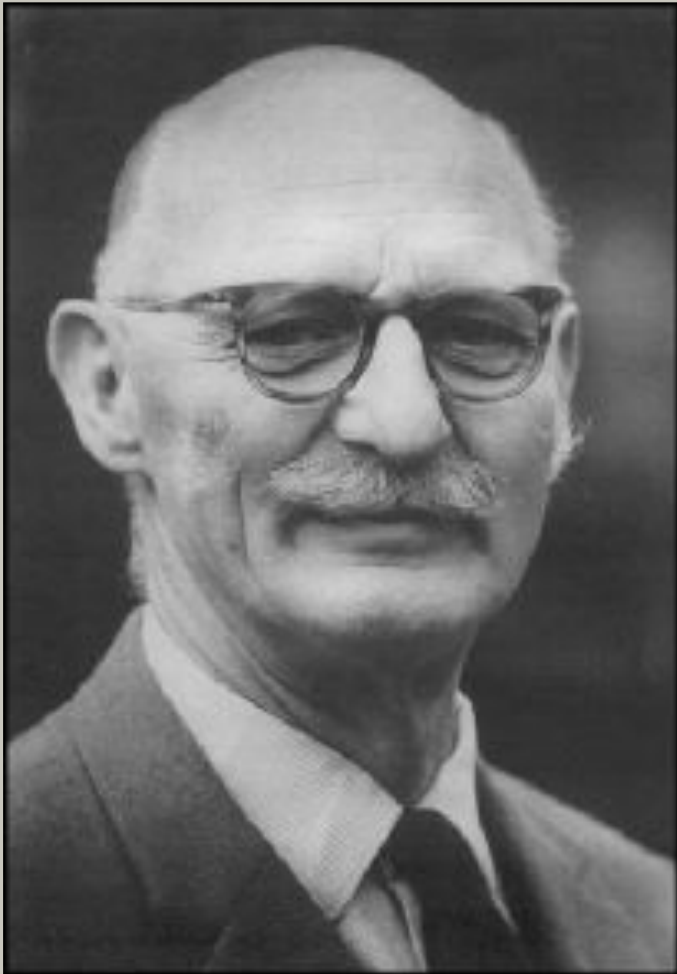
*The invention of the jet engine, by **Frank Whittle** (1907– 96).*



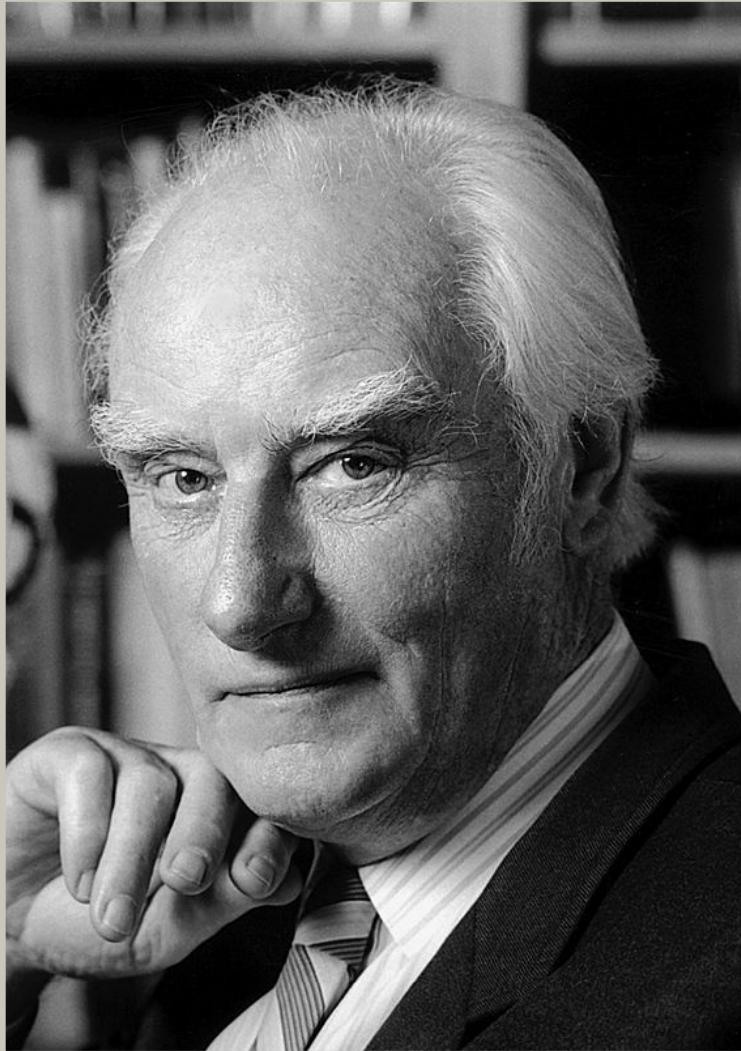
© Getty Images



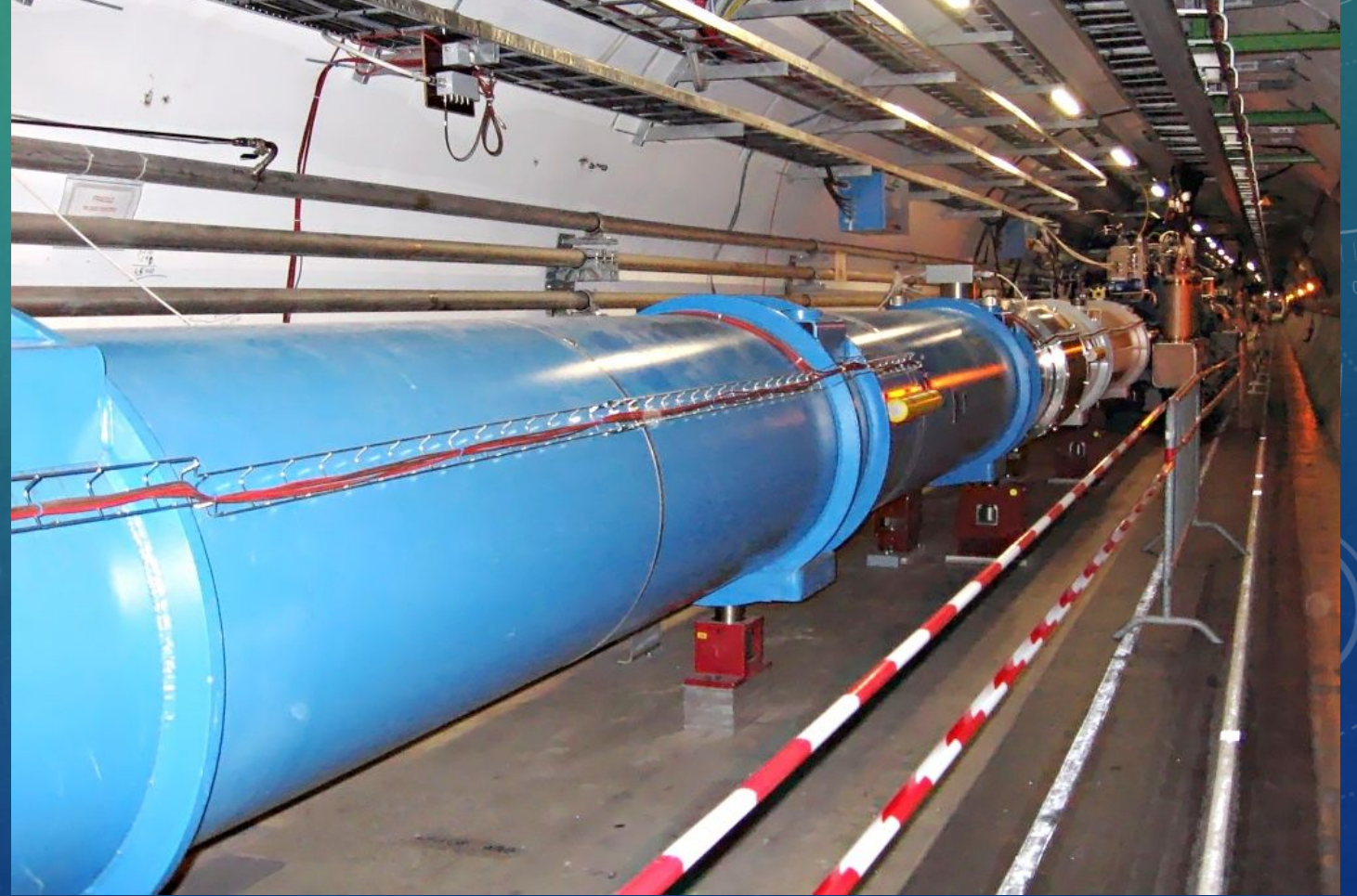
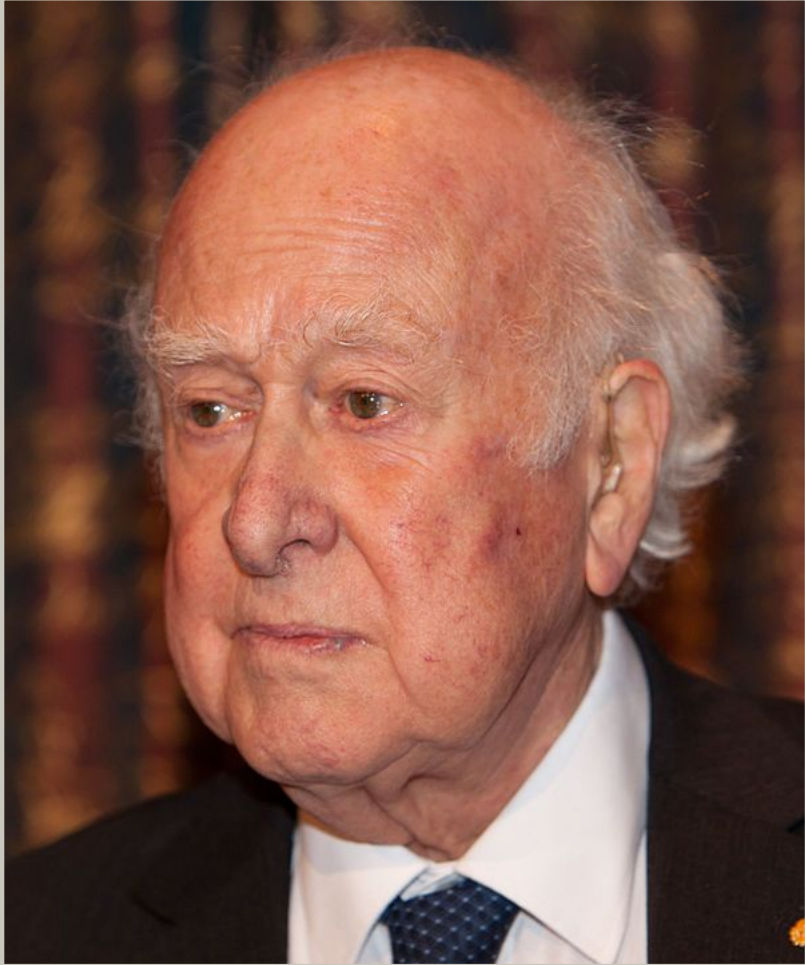
*The invention of the hovercraft, by **Christopher Cockerell (1910–99)**.*



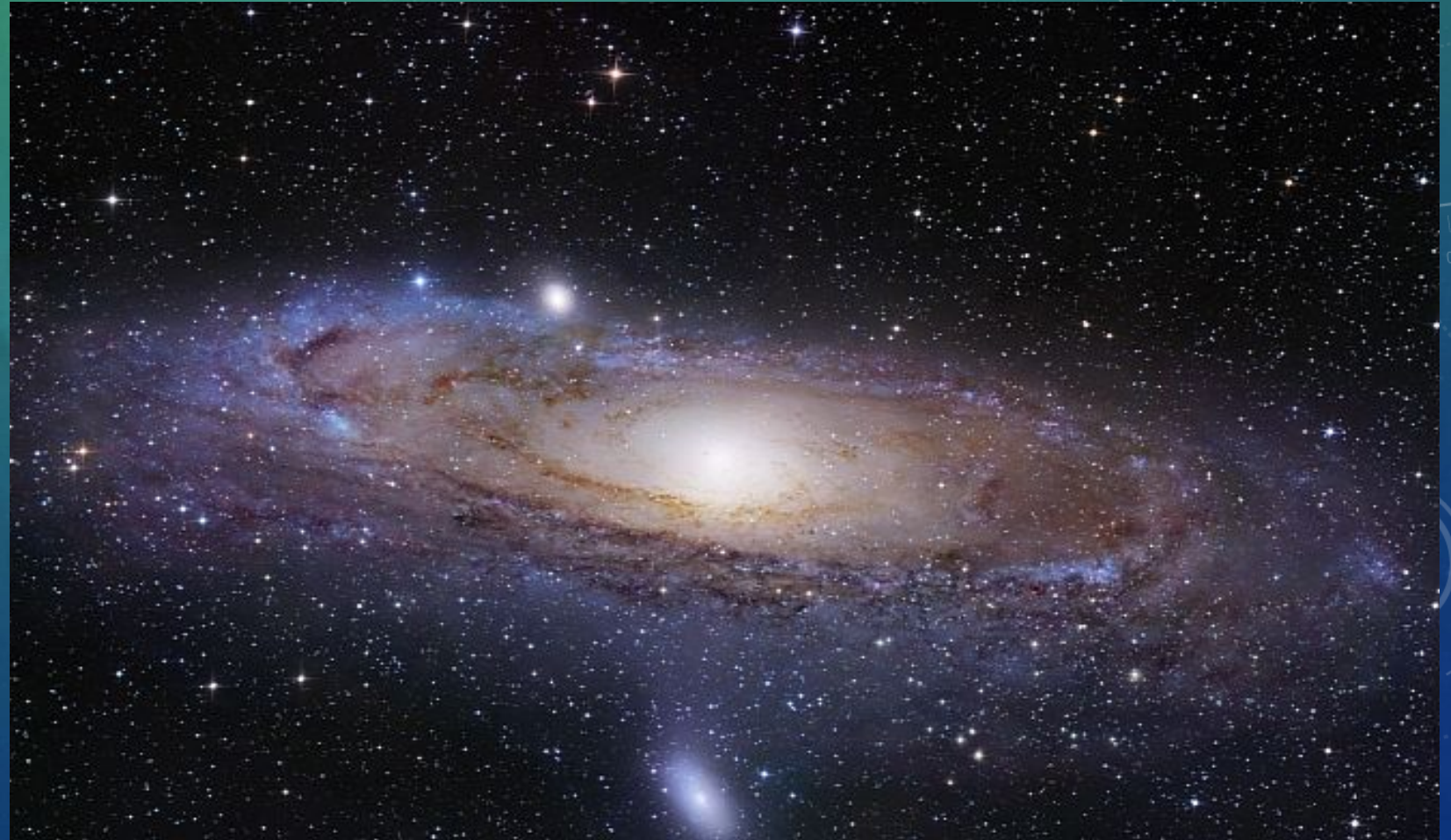
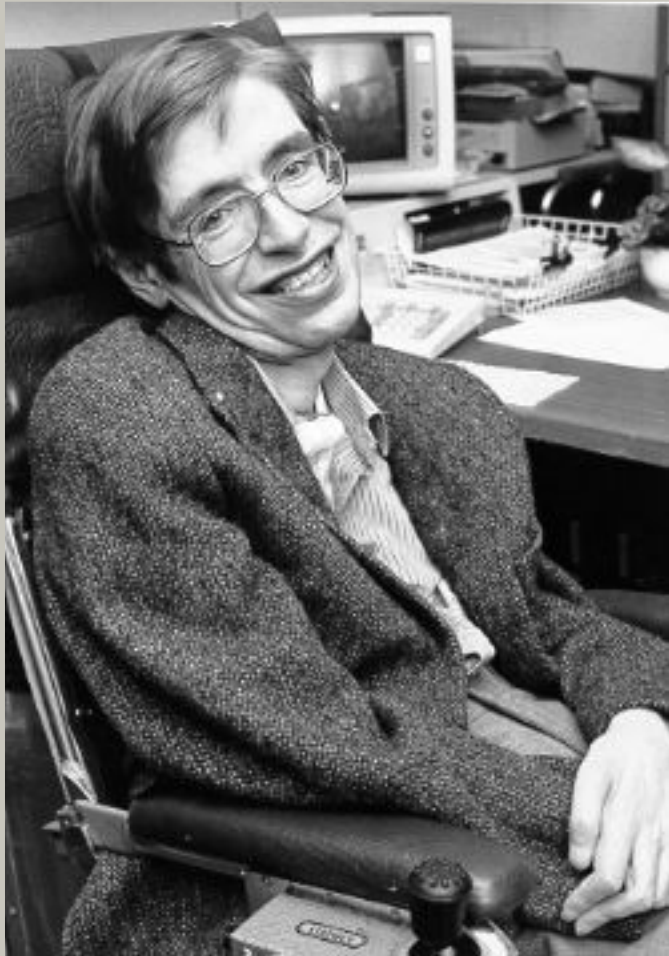
*The structure of DNA, by **Francis Crick (1916–2004)** and others.*



*The theoretical breakthrough of the Higgs mechanism to explain electroweak symmetry breaking and why some particles have mass, by **Peter Higgs (1929-)**.*



*Theories in cosmology, quantum gravity and black holes, by **Stephen Hawking** (1942–).*



To sum-up, nowadays, The UK has the most productive research base amongst the G7 (Group of Seven) and other leading research nations. The UK accounts for 3.2% of global expenditure on research and development and has less than 1% of the world's population, but produces:

- 6.4% of global journal articles*
- 11.6% citations*
- 15.8% of the world's most highly-cited articles.*