

LAWRENCE HARGRAVE

Fact file

Born: 29 January 1850, in Greenwich, England

Significance: aeronautical pioneer and inventor, best known for the box kite invention (1893), and work on the rotary engine for small aircrafts

Died: 14 July 1915, Darlinghurst, New South Wales, of peritonitis



Bayliss, Charles (1850 – 1897)

Lawrence Hargrave and unidentified man with four box kites at Stanwell Park, New South Wales, 1894

Sepia photograph,
24.2cm x 29.3cm
nla.pic-an12888301

This is a photograph of aeronautical inventor Lawrence Hargrave (left) and James Swain (part time caretaker of Hargrave's estate at Stanwell Park), on the coast between Sydney and Wollongong, New South Wales. They are assembling five box kites and joining them together, in preparation for using them to lift a man into the air. The kites are labelled 'A', 'B', 'C', 'D' and 'E'. There appears to be a form of spring scale attached to the kite section marked 'C', and the men may be measuring the force applied by the wind. They are in fairly open country high above the sea, where it is likely that the winds would be strong. Hargrave is in shirtsleeves and leaning back, straddling a seat attached to the kite marked 'E'. Behind the kites is the reel of wire that was attached to the kites, to prevent them from flying free.

Education value

This resource is useful because it shows:

- » Lawrence Hargrave (1850-1915) assembling box kites in Stanwell Park where he became the first man in Australia to fly in 1894: his contraption of four connected box kites enabled him to float 5 metres (16 feet) above the ground
- » the components of Hargrave's four-box-kite construction - he discovered that box kites, with their two separated cells or double planes, provided the best stability in the air, thus providing an effective platform for the engine needed to achieve powered flight
- » one of three aeronautical concepts developed by Hargrave that were vital in the design of the first aeroplanes - the box kite wing, the curved wing surface to generate greater lift and the thick leading wing edge or aerofoil

- » by virtue of the fact the photographer Bayliss was present, that Hargrave had no interest in keeping his experiments secret - he never patented anything and was happy to share his ideas with everyone at a time when would-be aviators were vying to become the first to achieve powered flight;
- » an example of the photographic work of Charles Bayliss (1859-1897), regarded as one of Australia's greatest 19th century photographers, best known for his photographs of Sydney and its environs, leisure activities and the landscape. More information at <http://www.nla.gov.au/exhibitions/bayliss/>

POINTS FOR DISCUSSION

Hargrave never applied for a patent on any of his inventions: he did not need the money, and was a passionate believer in free communication in the scientific community, as quoted in 1893: *"Workers must root out the idea that by keeping the results of the labors to themselves a fortune will be assured to them. Patent fees are so much wasted money. The flying machine of the future will not be born fully fledged... like everything it must be evolved gradually. The first difficulty is to get a thing that will fly at all. When this is made, a full description should be published as an aid to others. Excellence of design and workmanship will always defy competition"*¹

Hargrave's box kite was illustrated internationally in subsequent years, and is considered a critical link in the development of the European aeroplane. The first observed European flight was in November 1906, and the airplane resembled a large box kite with a rotary engine.

Discuss Hargrave's views on competition, collaboration and patents, and how they might have affected scientific recognition or financial benefit from his inventions.

SOURCES AND FURTHER READING

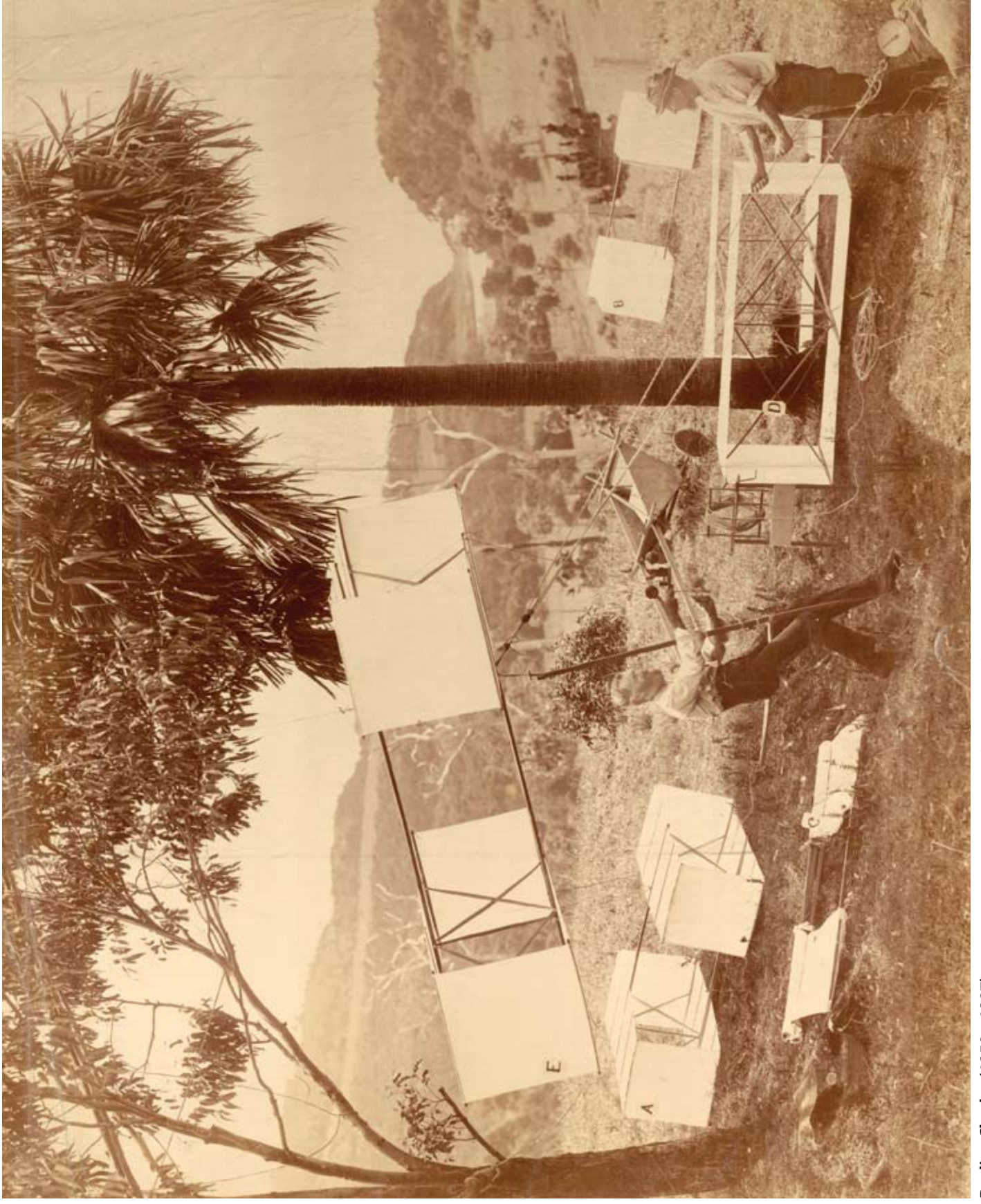
¹ Octave Chanute "Progress in flying planes" *Aeroplanes*, Part XV, September 1893

Search for **Lawrence Hargrave** in National Library of Australia's catalogues and databases

<http://librariesaustralia.nla.gov.au> publications and research papers of Lawrence Hargrave

<http://www.pictureaustralia.org> images, including Hargrave's flying-machine models

<http://pandora.nla.gov.au> websites, including a detailed timeline of Hargrave's life



Baylis, Charles (1850 – 1897) Lawrence Hargrave and unidentified man with four box kites at Stanwell Park, New South Wales, 1894 Sepia photograph, 24.2cm x 29.3cm