

Newsletter of the Australian Society for History of Engineering and Technology

First Annual Conference, Automotive Historians Australia

“Automotive Histories/Driving Futures” is the theme of the first annual conference of Automotive Historians Australia Inc. The conference will take place in Melbourne from 1-3 September 2016 and is being hosted by RMIT Design Archives, RMIT School of Architecture and Design and the Faculty of Art, Design and Architecture, Monash University.

The conference theme will address the implications of the cessation of local car manufacture by the remaining three manufacturers (Toyota, Ford and GM Holden) and will examine the trends towards alternative methods of propulsion as the dominance of the 20th century concept of the passenger road vehicle wanes. The broad subject of “automobility” will be examined through a local and national lens. Papers are invited.

Abstracts due: 5 February 2016

Final papers due: 16 July 2016

Conference: 1-3 September 2016

More information: <http://www.autohistoriansaustralia.org/>

Major grant for aviation technology project

In what we hope is a sign of renewed academic interest in the history of technology, an ASHET member has recently been awarded a prestigious Australian Research Council Discovery Early Career Researcher Award (DECRA).

Commencing in 2016, University of Sydney historian Dr Peter Hobins will undertake a project entitled ‘Black box re-order: technology, air safety and Australian airspace, 1938–68’. This initiative will build on Peter’s prior work on interwar and wartime scientific research in Australia, while exploring the emergence of aviation safety systems via a partnership with Melbourne’s Airways Museum.

For more information on this project, visit <https://rms.arc.gov.au/RMS/Report/Download/Report/1b0c8b2e-7bb0-4f2d-8f52-ad-207cfbb41d/6>

Prize for paper on German car mechanics and the introduction of new diagnostic equipment

The International Committee for the History of Technology (ICOHTEC) awarded its 2015 Maurice Daumas Prize to Stefan Krebs for his article, **Dial-gauge versus Senses 1-0: German Car Mechanics and the Introduction of New Diagnostic Equipment 1950-1980**. It was published in *Technology and Culture* in April 2014 (Volume 55, Number 2, pp. 354-389).

The Prize is awarded to the author of the best article submitted on the history of technology and published in a journal or edited volume in 2014.

The article has two parts: first, Krebs establishes the importance of diagnostic listening as a skill cultivated by expert German car mechanics; in the second part he talks about how social relations made the adoption of diagnostic tools in car repair in Germany more difficult and slower than in America in the 1950s. Krebs suggests that the different sociotechnical hierarchies in the field of car maintenance were crucial to the way in which diagnostic tools were adopted or resisted.

In explaining the fate of diagnostic tools among German car mechanics, Krebs argues that the tacit knowledge of diagnostic listening was key not only to how they understood the technology of faulty cars but also

to their social world, where the guild structure made social hierarchies among car mechanics more explicit and longer lasting than elsewhere. The skills of experts set them apart from apprentices in the field and thus preserved their social position.

Because of this, Krebs argues, diagnostic tools could not be adopted by German mechanics until they were advertised not as allowing semi-skilled workers to do expert work, but as tools that needed expert training to be correctly used and understood. This crucial change allowed German car mechanics by the 1980s to make use of diagnostic instruments without the low status associations that were earlier implied by their use.

Stefan Krebs is a postdoctoral researcher in the Department of Technology and Society Studies at Maastrich University in Holland.

Report on the ASHET Pies Project By Elizabeth Roberts

Inspired by a report into the meat pie industry in Sydney commissioned by Unilever in 1956 when they, the manufacturer of the margarine used to make meat pies, were thinking about venturing into the manufacture of meat pies, ASHET applied for and used an Australian Government Your Community Heritage grant to research the pie industry and with that research produced the nine pop-up panels that make up the Pie Display. ASHET member Anne Arthur did most of the research on the history of the meat pie that is an important part of the display.

The display in nine panels describing the history of the Australian meat pie was launched on 26 February 2015 at History House by Associate Professor Carol Liston, President of the Royal Australian Historical Society. Thinking to share the project with a larger audience Ian Arthur negotiated with the Mitchell Library Librarian to advertise the display in their inter library newsletter. ASHET had agreed to pick up the tab for the touring the display to NSW country libraries. The response was immediate and over 30 libraries asked to borrow the display. With only one copy it would have taken over 2 ½ years for all the libraries to get the display. Permission was obtained for surplus funds left at the end of the project, instead of being returned, to be used to produce a second copy of the display. With two copies of the display it was possible to have all the libraries initially requesting the display to receive the display by the end of 2016. ▶▶



ASHET Pies display at Penrith library, July 2015

Next ASHET events

Thursday 18 February 2016

Talk by David Rosenberg

Inside Pine Gap: Its Technical Intelligence Surveillance Role

The Joint Defence Facility, Pine Gap is one of the largest and most important intelligence collection facilities in the world. Its location in Australia and its actual function has been a local focus of conjecture, debate and controversy. What is the technical and functional reality of this United States-Australia base?

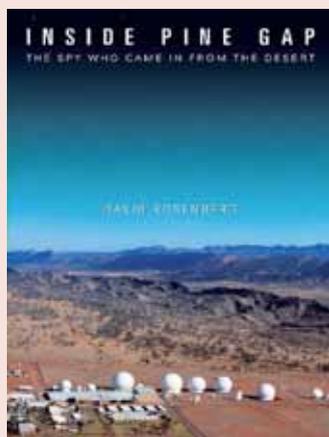
David Rosenberg graduated in Science and Electrical Engineering and has over 20 years experience in international electronic intelligence surveillance and analysis. With the highest level of United States Government security clearance, he worked inside the operational "nerve centre" of Pine Gap from 1990 till 2008 on behalf of the US National Security Agency. His security cleared book "Inside Pine Gap--the spy who came in from the desert", and his talk describes the technical intelligence collection and analysis function of Pine Gap with examples of its application in particular military and other security surveillance scenarios. He also comments on the personal and community impacts of the presence of Pine Gap in "remote" Alice Springs. David is now an Australian Citizen, living in Sydney and engaged with security activities.

Venue: History House, 133 Macquarie Street, Sydney

Time: 5.30 for 6 pm

Cost: Includes light refreshments on arrival; RAHS and ASHET members \$10, others \$12

Bookings: phone RAHS on (02) 9247 8001 or email history@rahs.org.au



Tuesday 8 March 2016

Talk by Damian McDonald

Wartime Innovation: Learning from Loss

World War I saw the first large-scale use of technology in warfare. Rapid advancements in machine-firing weapons, hand-thrown bombs, aerial reconnaissance and artillery turned whole countries into battlegrounds. Wounds caused by new weapons like machine guns and grenades challenged medical teams to develop new technologies and techniques. Blood transfusions, infection controls, X-rays and new surgical techniques saved soldiers' lives, though many returned home without limbs.

The tremendous loss experienced by soldiers, their families and communities, changed Australia forever. It strengthened community spirit, changed Australia's view of British imperialism and influenced future military tactics. *Wartime Innovation* reveals the impact of World War I on science, technology and medicine, as well as the emotional and psychological cost of war and its wider social impact.

Damian McDonald is a curator at the Museum of Applied Arts and Sciences in Sydney, Australia. He works closely with the arms and armour, health and medicine, and technology collections. Damian is also a writer and rock musician. He is the curator of *Wartime Innovation: learning from loss and, Recollect: health and medicine*. Damian is interested in the myriad ways technologies influence culture.

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Image credit: Ryan Hernandez, Museum of Applied Arts and Sciences.

To save on transport costs the requesting libraries were sorted into regional areas and as far as possible were allocated times that suited them. The display leaves from Sydney in the last days of a month arriving early in the next month at the first library in a region then moves round the libraries in that region before returning to Sydney or travelling directly to the next region.

Many small freight companies operate in the country regions often just servicing two towns such as from Armidale to Walcha. So to get the display from Walcha to Glen Innes took two couriers co-ordinated out of Armidale. Thank you to Glen Innes Library for paying for this and a big thankyou to Tamex Transport Freight Forwarding Service Tamworth for donating the transport from Glen Innes to Inverell.

The Riverina Regional Library service have their own van and so are moving the display between their libraries. For ease of transport 6 canvas

bags (3 per display) have been made for the display to travel in.

Many of the libraries hosting the display are in small country towns where the library is operated by one librarian out of a council owned or rented shop building. They have been most enthusiastic about the display. One town joined with the local pie shop and ran a simple knowledge completion each week to win a pie from the local pie shop. Another said it was the best display they have received.

For the month of January the display will be at the Hornsby Library beside Hornsby station. This is its last Sydney booking.

Writer of this article, ASHET member Elizabeth Roberts, is responsible for managing the current phase of the Pies Project, which is currently touring the two sets of nine display panels to over forty municipal libraries throughout NSW. ■

Lawrence Hargrave: Father of Powered Flight

By Michael Adams



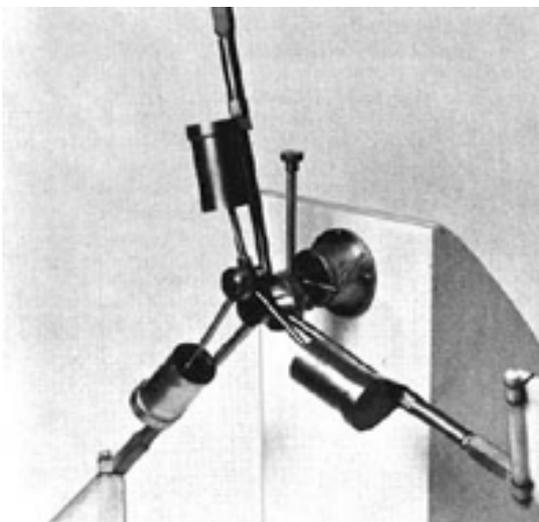
Lawrence Hargrave

As well as a world recognised pioneer aviator, Lawrence Hargrave was one of Australia's greatest scientists, a creative inventor of many original designs and a thorough researcher, refining ideas through countless experiments. Although born in England he trained and worked in Australia through the 1880s and 90s. It can be claimed that if he had a light and powerful internal combustion engine available to inventors in the 20th century he would probably have flown a powered aircraft.

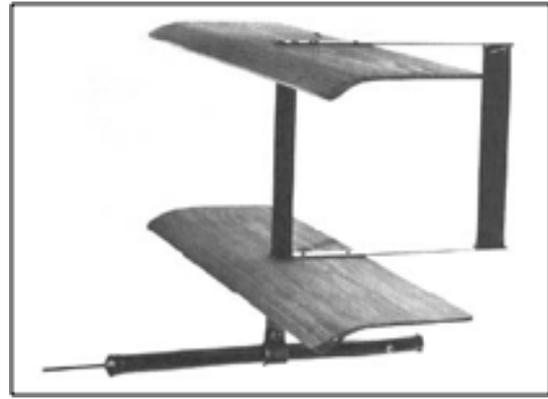
The Lawrence Hargrave Centre (lawrencehargravecentre.com), begun in 2007, has as its aim to showcase his legacy, educate the young and make available learned articles demonstrating his place in aviation history. We have a display trailer and many commissioned models, but no permanent home.

Hargrave invented the radial rotary engine in 1889, not only the concept but an actual three cylinder working engine, leaving to the aviation world of the 20th century a light efficient type of aircraft engine.

He invented the wing designs used by the Wright brothers, curved and turned down at the front, mono and bi-plane wings, wings that gave maximum lift in flight.

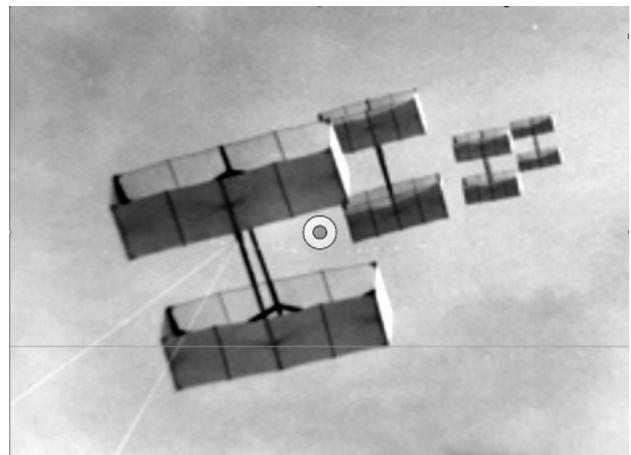


Hargrave's three cylinder rotary engine



Hargrave wing section as used by the Wright brothers

He invented the stable wing surfaces of the box or cellular kites, kites which when toggled together took the first European aircraft into the skies and became the bi-plane.

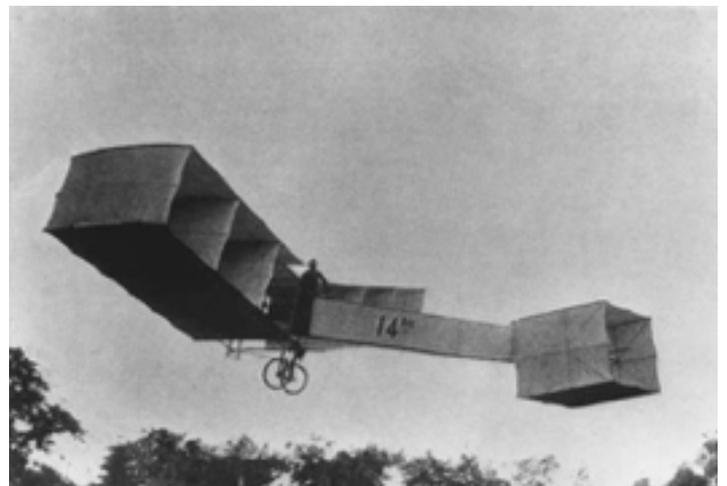


Hargrave box kites

The other essential ingredient for powered flight was denied to him, an internal combustion engine light and powerful enough to be taken to the skies, along with the weight of a pilot. He invented 36 engines from rubber band to flapping wings, compressed air to steam, even a jet engine; all fell short of what would be necessary to sustain a manned powered flight.

Had he the engine available to the early aviators, the Wright Brothers of USA, and Santos Dumont of France, then the other ingredients, propellers etc. would probably have followed, so thorough was his scientific method.

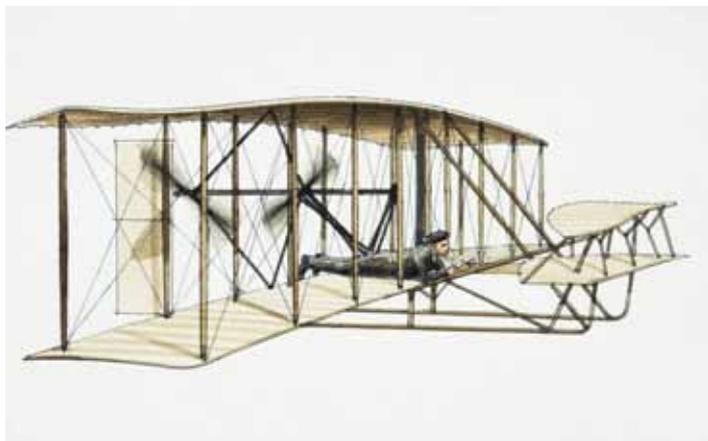
As it was, the first successful powered manned flight in Europe, by



Santo Dumont's pioneering flight in France, 1906

Santos Dumont in the 14-BIS in France in 1906, was achieved through toggling Hargrave cellular (box) sections together. This flight was achieved with the pilot standing, wearing a top hat, enjoying the stability of Hargrave's wings and fuselage.

The Wright Brothers' 1903 plane as obviously a direct descendant of Hargrave's work, a bi-plane with curved wings, but no one has been able to fly a replica, such were Wilbur Wright's gymnastic skills lying horizontally, manoeuvring the craft in optimum breeze conditions.



Wright brothers plane, 1903

Hargrave accomplished so much, and mostly in the apparently constricting terrain of Stanwell Park valley and beach, a testament to his genius. Stanwell Park was an inherited family property, bequeathed by his brother Ralph along with a modest fortune from sale of family land at Stanwell Park and Coalcliff. The Great Depression of the 1890s required careful husbanding of resources, and Stanwell Park was a place where it was possible to subsist on what could be grown there. But most importantly, it was the prevailing sea breezes, and expanse of beach, which allowed such convincing experimentation with wing surfaces.

The years living at Stanwell Park, 1893-99, were filled with achievement, but were also filled with tension. His family was considerable, five children, and the two eldest girls growing through adolescence without formal education, and beginning to resent it. Their mother, Margaret, was far removed from the social atmosphere of Sydney in which she had so easily moved and enjoyed. After leaving Stanwell Park there was a short stay in England, unproductive for Hargrave and igniting a longing to return there in his womenfolk. The elder girls did return when of independent age, while Hargrave found in his advancing years that it was difficult to return to the momentum of his inventive work of the 1890s.

Hargrave applauded the achievement of the Wright Brothers who later included Hargrave in their list of the five main contributors to the evolu-



Lawrence Hargrave and family

tion of the airplane. The French could develop their own aircraft completely independent of the Americans, thanks to Hargrave's fuselage of box kites. The first commercial passenger planes were developed by the French Voisin brothers who called their craft 'The Hargrave'. As early as 1892 the world's leading Aviation chronicler, Octave Chanute, recorded that the one man that deserved to fly was Lawrence Hargrave. Another great aviation pioneer, Alexander Graham Bell, best known for the Bell telephone, came to Australia especially to acknowledge the great work of Hargrave.

2015 marks the centenary of Hargrave's death. The ending was sad. Geoffrey, his only son, was killed at Gallipoli, a quite brilliant potential engineering career cut short. Lawrence was dead just a few months later, the causes as much an incurable sadness as other physical ailments. He was then sixty five years old. His wife took the two younger daughters immediately back to England. Even his superb collection of models and inventions could not remain in Australia. The University of Sydney passed over the opportunity to house them, but a German museum in Munich snapped them up. All but a third were destroyed by allied bombing during WWII.

With family and work disappearing from Australia the memory and legacy of Hargrave was in danger of being forgotten here. The efforts principally of T. C. Roughley and Cecil Salier ensured that the memory stayed alive, and the surviving Hargrave models were returned and found a home at what is now the Powerhouse Museum, Sydney. They were also instrumental in the Hargrave memorial being erected at Bald Hill, Stanwell Park. William Hudson Shaw then published the definitive biography of Lawrence Hargrave, and placed him accurately among the greats of aviation pioneering.

Lawrence Hargrave Centre would dearly like a permanent home, a physical Centre, for the Hargrave heritage collected and commissioned, at Stanwell Park. His house, Hillcrest, is on private land and cannot be used for the purposes of a Centre. It is our dream to allow individuals and groups to enter the atmosphere of a dedicated Centre and come away with a greater appreciation of the greatness of this eminent Australian pioneer aviator and scientist. In the meantime please visit our website, lawrence-hargravecentre.com.

Michael Adams, author of *Wind beneath his Wings: Lawrence Hargrave at Stanwell Park*, and a founder of the Lawrence Hargrave Centre. This article is the text of a talk presented by Michael at History House on 14 July, 2015, to commemorate the centenary of Hargrave's death.

Further reading

Adams, Michael, *Wind beneath his wings : Lawrence Hargrave at Stanwell Park*, Sydney? : M. Adams, 2004

W. Hudson Shaw, Olaf Ruhen, *Lawrence Hargrave : explorer, inventor & aviation experimenter*, St. Lucia, Qld. : University of Queensland Press, 1988.

Australian Dictionary of Biography, <http://adb.anu.edu.au/>

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