



**ROYAL  
AERONAUTICAL  
SOCIETY**  
AUSTRALIAN DIVISION  
SYDNEY BRANCH

**MARCH 2018**

Vol 2018-1 ABN 75 134 058 731

PO Box 573, Mascot, NSW 2020

Web: [www.raes.org.au](http://www.raes.org.au)

Email: [sydneybranch@raes.org.au](mailto:sydneybranch@raes.org.au)

<https://www.facebook.com/groups/RAeSSydney/>

**NEWSLETTER**



**Captain Allen Dickinson FRAeS  
Head of Flight Operations Systems  
Qantas Airways Limited**

discussing

**“Flight Planning –  
Yesterday, Today & Tomorrow”**

Date: **Wednesday 7<sup>th</sup> March, 2018**

Time: **18:30 hours** – following the AGM (Refer page 10)

Venue: **New Law School Lecture Theatre 101  
Eastern Avenue, University of Sydney**



To view map please click/copy and paste into your web browser the following:

[https://www.google.com/maps/place/Sydney+Law+School/@-](https://www.google.com/maps/place/Sydney+Law+School/@-33.8868216,151.1889231,17z/data=!4m15!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+(F10),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US)

[33.8868216,151.1889231,17z/data=!4m15!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+\(F10\),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US](https://www.google.com/maps/place/Sydney+Law+School/@-33.8868216,151.1889231,17z/data=!4m15!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+(F10),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US)

Light refreshments will be available **prior** to the commencement of the meeting. Attendance will attract 1.5 CPD hour

**PROFILES:** Allen was born and raised in the Blue Mountains west of Sydney. After completing High School he enrolled to study aeronautical engineering at the University of Sydney before joining the Royal Australian Navy in 1980 to complete aircrew training. He graduated from No. 112 pilots course in 1981 and flew a variety of fixed wing and rotary wing aircraft with the RAN. He qualified as a Qualified Flying Instructor, Instrument Rating Examiner and Maintenance Test Pilot with the RAN. He joined Australian Airlines in 1990 initially flying the B737. Following the merger with Qantas in 1992 Allen undertook command training on the B737 in 1996 and completed conversion training onto the A330 aircraft in 2013. He has held a number of management positions within Qantas including Manager Flight Crew Audit, Manager Compliance and Industry Relations and Head of Operations Support before commencing his current role as Head of Flight Operations Systems.

Allen has extensive international experience and sits on the ICAO Fuel Use Sub-Group, The ICAO Cargo Compartment Fire Suppression Sub-Group and the ICAO Rescue Fire Fighting Services Sub-Group. He also has an open invitation to attend the ICAO Flight Operations Panel as an industry advisor. He also is Vice Chair of the IATA Flight Operations Group, Chairman of the IATA Technical Group for the IOSA Flight and Dispatch Group and is a previous member of the IATA IOSA oversight Committee.

Allen was elected as a Fellow of the Royal Aeronautical Society in 2016.

**SYNOPSIS:** Flight planning has evolved from the rudimentary plotting of a planned flight path to a highly scientific process involving multiple systems and advanced maths to achieve levels of optimisation demanded by modern air carriers.

Several years ago, Qantas embarked on a project to replace its' current flight planning system. In partnership with the University of Sydney and the Australian Centre of Field Robotics, and vendors in Austria and Poland, Qantas has built a new flight planning system that fundamentally redefines the methodology that it uses to plan flights.

This talk will explore some of the changes that have taken place over the years and describe the development and planned introduction of the new system due for deployment in early 2018.

**RSVP:** Whilst attendance is free - registration for the evening **is required**. Please register by clicking on/copying and pasting into your URL this link: <https://raesmar18.eventbrite.com.au> Your registration will be confirmed by email with an attached ticket. **Please print the ticket and present the ticket at the door. Please note:** Non members should enter the code **NM** if requested to enter a RAeS membership number. Any member who does not have access to the internet can send a letter to Mr Jeff Lock, 4 Hillcrest Place, North Manly NSW 2100 with your name (plus names of accompanying persons), membership number or state 'Friend' if you are a Friend of the Branch, and phone number.

**Light supper:** Following the presentation light supper (pizzas) will be provided to give the speaker and attendees the opportunity to mingle and to continue discussions.

**Parking:** is available in the Shepherd Street multi-story car park, located on the corner of Cleveland St and Shepherd St. The rate is \$2 per hour (up to \$6 maximum), but note that only gold coins are accepted in some machines. Parking is also available in University of Sydney On-Campus Parking for \$2 per hour (up to \$6 maximum). Additionally, free parking is available in surrounding streets. Please observe parking restrictions and allow time to drive to the University of Sydney, park, and walk to the venue.

**Public Transport:** The closest train station is Redfern station, which is a 10 minute walk away from the venue. From Railway Square near central station any 42X bus (e.g. 422, 426...) and the M30 will take you to the University of Sydney (on City Road). Please allow time to travel by public transport, including waiting time, and time to walk to the venue. Please refer for further details: <http://www.sydneybuses.info/routes/timetables-route-maps>

**Location:** Building Name: Sydney Law School/New Law Annexe Building Code: F10A



## The 2018 International Eminent Speaker is:



### **Susan Ying** **Chief Integration Officer** **Commercial Aircraft Corporation of China** **(COMAC)**

discussing

### **“Innovation in Aeronautical Sciences: the Art of the Possible”**

Date: **Wednesday 4<sup>th</sup> April, 2018**

Time: **18:00 for 18:30 hours**

Venue: **New Law School Lecture Theatre 101  
Eastern Avenue, University of Sydney**

To view map please click/copy and paste into your web browser the following:  
[https://www.google.com/maps/place/Sydney+Law+School/@-33.8868216,151.1889231,17z/data=!4m1!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+\(F10\),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US](https://www.google.com/maps/place/Sydney+Law+School/@-33.8868216,151.1889231,17z/data=!4m1!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+(F10),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US)

**This a joint meeting with Engineers Australia**

Light refreshments will be available prior to the commencement of the meeting. Attendance will attract 1.5 CPD hour



ENGINEERS  
AUSTRALIA

**PROFILES:** A major contributor in aerospace industry, academia, and government labs for the past 35 years, Susan Ying is Chief Integration Officer for the Commercial Aircraft Corporation of China, also known as COMAC. She specializes in large-scale integration of aerospace programs, especially in international collaboration in design, development, manufacturing, test, and regulatory issues.

Susan is passionate about the Aerospace industry. She attributes her success to having great mentors and opportunities. Throughout her career Susan has been a leader, engineer, and professor in the industry. Prior to her current position, Ying retired from the Boeing Company as Director of the Boeing Research and Technology organization. Ying's other roles at Boeing included Director of Engineering and Information Technology, Enabling Technology Program Manager, Executive Program Integration for Phantom Works, leadership positions in the C-17 Extended Range Program, Systems Engineering and Integration, Aerodynamics, and Flight Performance for Advanced Transport Technologies. Before joining Boeing, Ying taught at universities and directed research in the DOE Research Labs and NASA Ames Research Center.

Dr. Ying is a Fellow of the AIAA and a Fellow of the Royal Aeronautical Society. She was elected multiple times and served on the Board of Directors of AIAA. She is currently the President of the International Council of Aeronautical Sciences (ICAS). Dr. Ying has also been an executive member serving on the Aerospace Council of the SAE International. She was an inaugural member in the NASA Advisory Council Innovation and Technology Committee. She was one of the team members representing US university professors as the Aerospace Education Ambassador to Russia.

During her distinguished career she has demonstrated success both at individual and team levels, and has been recognized as recipient of many honors, including the People's Republic of China Friendship Award, Asian American Engineer of the Year Award, Boeing Professional Excellence Award from the Chief Technology Office, and NASA Group Achievement Award, Boeing Amelia Earhart Society Award; AIAA Applied Aerodynamics Best Paper Award, NASA Group Achievement Award, US Astronauts Candidate Class '95 (one of the 120 finalists), Outstanding Young Women of America, '87; Ballhaus Award, and First-Place Ph.D. Thesis, Aero/Astro, Stanford University, '86.

Ying holds a commercial pilot license and is a FAA-Certified Flight Instructor. She earned her BA in Mechanical Aerospace Engineering from Cornell University, and received her PHD in Aeronautics and Astronautics from Stanford University. She took executive education training from the Kellogg School of Business Administration, Wharton Business School, and Brookings Institute in Brussels. In addition to

her immense passion for flying, Susan also enjoys dancing and music. She resides in Sammamish, WA, USA and Shanghai, China.

---

**SYNOPSIS:** The aerospace industry has given the world over 100 years of incredible innovation. Technical miracles, thought impossible at the time, have been developed including flight controls, jet engines, new materials and satellite navigation, just to name a few. These advances have moved flight from basic stick and rudder to a multitude of systems and capabilities that did not exist a decade ago including commercial autonomous vehicles. How can the aerospace industry become even more innovative and agile to meet the challenges of the next phase of development? How can Australian innovators work with global aerospace players to embrace emerging breakthroughs as the catalyst for innovation?

This presentation provides a glimpse of aeronautical science innovation trends together with their associated challenges and opportunities. Three key components covered are: transformational tools and processes; evolutionary innovation in the near mid-term; and, game-changing products and services. For example, with the Internet of Things (IoT) and Data Analytics, value will multiply throughout the whole product life cycle. In the near mid-term future, products will trend towards “going soft” (software), going green, and going fast. Finally the presentation discusses innovations which enable further game-changing capabilities such as autonomous and intelligent systems that could find their way into application in the next decade.

The global aerospace industry is now on the cusp of its Third Revolution. The First Revolution took us to the jet age. The Second Revolution brought us to today where at any given time, there are thousands of commercial jets in the air. With the convergence of breakthrough innovations (e.g. as discussed in this presentation) potentially yielding unprecedented integrated capabilities, aerospace engineers can now open the design space beyond the traditional “tube and wings” and fossil-fuel based power plant. Building on our past successes, we must work together to seize the opportunity to innovate by leveraging the global supply chain like never before for achieving the art of the possible!

---

**RSVP:** Whilst attendance is free - registration for the evening **is required**. Please register by clicking on/copying and pasting into your URL this link: <https://www.engineersaustralia.org.au/Event/sydney-focus-i-innovation-aeronautical-sciences-art-possible> Your registration will be confirmed by email – please print the confirmation and bring it with you.

---

**Light supper:** Following the presentation light supper (pizzas) will be provided to give the speaker and attendees the opportunity to mingle and to continue discussions.

---

**Parking:** is available in the Shepherd Street multi-story car park, located on the corner of Cleveland St and Shepherd St. The rate is \$2 per hour (up to \$6 maximum), but note that only gold coins are accepted in some machines. Parking is also available in University of Sydney On-Campus Parking for \$2 per hour (up to \$6 maximum). Additionally, free parking is available in surrounding streets. Please observe parking restrictions and allow time to drive to the University of Sydney, park, and walk to the venue.

---

**Public Transport:** The closest train station is Redfern station, which is a 10 minute walk away from the venue. From Railway Square near central station any 42X bus (e.g. 422, 426...) and the M30 will take you to the University of Sydney (on City Road). Please allow time to travel by public transport, including waiting time, and time to walk to the venue. Please refer for further details: <http://www.sydneybuses.info/routes/timetables-route-maps>

---

**Membership Information:** Annual memberships commence at only \$145 or \$28 for Students (but free for the first year). Being a member helps us sustain a vibrant activities programme and opens the way to access restricted 'member-only' events. For further details refer: <https://www.raes.org.au/index.php/membership/2014-11-02-00-22-30/become-a-member>

---

**Closed Member Only Group on Facebook:** Sydney branch is live video streaming our monthly branch lectures. Watch lectures live or at a later time, at the “RAeS - Sydney Branch - Members Only” group within Facebook. Please note that this service is only available to financial members of the Royal Aeronautical Society.

---

**Airbus, Rolls-Royce, and Siemens team up for electric future:** Airbus, Rolls-Royce, and Siemens have formed a partnership which aims at developing a near-term flight demonstrator which will be a significant step forward in hybrid-electric propulsion for commercial aircraft. The three companies together announced the ground-breaking collaboration, bringing together some of the world's foremost experts in electrical and propulsion technologies, at the Royal Aeronautical Society in London on 28<sup>th</sup> November 2017.

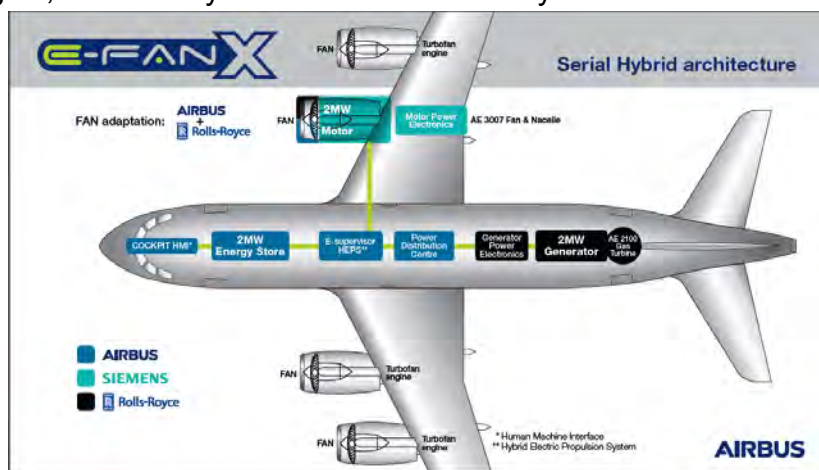
The E-Fan X hybrid-electric technology demonstrator is anticipated to fly in 2020 following a comprehensive ground test campaign, provisionally on a BAe 146 flying testbed, with one of the aircraft's four gas turbine engines replaced by a two megawatt electric motor. Provisions will be made to replace a second gas turbine with an electric motor once system maturity has been proven.

"The E-Fan X is an important next step in our goal of making electric flight a reality in the foreseeable future. The lessons we learned from a long history of electric flight demonstrators, starting with the Cri-Cri, including the e-Genius, E-Star, and culminating most recently with the E-Fan 1.2, as well as the fruits of the E-Aircraft Systems House collaboration with Siemens, will pave the way to a hybrid single-aisle commercial aircraft that is safe, efficient, and cost-effective," said Paul Eremenko, Airbus' Chief Technology Officer. "We see hybrid-electric propulsion as a compelling technology for the future of aviation."

As part of the E-Fan X programme, Airbus, Rolls-Royce, and Siemens will each contribute with their extensive experience and know-how in their respective fields of expertise:

- **Airbus** will be responsible for overall integration as well as the control architecture of the hybrid-electric propulsion system and batteries, and its integration with flight controls.
- **Rolls-Royce** will be responsible for the turbo-shaft engine, two megawatt generator, and power electronics. Along with Airbus, Rolls-Royce will also work on the fan adaptation to the existing nacelle and the Siemens electric motor.
- **Siemens** will deliver the two megawatt electric motors and their power electronic control unit, as well as the inverter, DC/DC converter, and power distribution system. This comes on top of the E-Aircraft Systems House collaboration between Airbus and Siemens, launched in 2016, which aims at development and maturation of various electric propulsion system components and their terrestrial demonstration across various power classes.

Among the top challenges for today's aviation sector is to move towards a means of transport with improved environmental performance, that is more efficient and less reliant on fossil fuels. The partners are committed to meeting the EU technical environmental goals of the European Commission's Flightpath 2050 Vision for Aviation (reduction of CO<sub>2</sub> by 60%, reduction of NO<sub>x</sub> by 90% and noise reduction by 75%). These cannot be achieved with the technologies existing today. Therefore, Airbus, Rolls-Royce and Siemens are investing in and focusing research work in different technology areas including electrification. Electric and hybrid-electric propulsion are seen today as among the most promising technologies for addressing these challenges.



**Historical Aircraft Restoration Society (HARS):** HARS, based on the Illawarra regional airport near Wollongong, is currently undergoing major expansion, including projects of national significance. HARS is now one of the largest and most active historic aircraft organisations in the World, with a collection of over 40 aircraft, and is unique in operating eleven multi-engine aircraft (Super Constellation, 2 Neptunes, Convair 440, 2 C47, DC3, 2 Caribou, Catalina, Drover). Co-founder, President and Chief Pilot is Bob De La Hunty OAM.

The major activities in progress in during 2017 are:

- HARS has been nominated as the permanent home of the Australian Aviation Hall of Fame;
- HARS is currently restoring a second Convair, an ex-USAF 340 acquired several years ago at the USAF aircraft "bone yard" in Arizona - considerable progress has been achieved, including running of both engines.

- As a further demonstration of the very close relationship between HARS and the RAAF ( the RAAF having contributed four of the multi-engine aircraft operated by HARS), the Chief of Air Force Air Marshall Leo Davies AO CSC transferred title of an airworthy retired Lockheed AP-3C Orion to HARS at a special handover function at HARS on 3<sup>rd</sup> November.
- Acquisition of the Boeing 707-138B, owned and operated by John Travolta for a number of years in Qantas markings as a roving ambassador for the airline. Originally the thirteenth 707 purchased by Qantas, it was retired a number of years ago and is currently located near Atlanta, Georgia.
- The flagship of the HARS operating fleet is Lockheed Super Constellation VH-EAG, manufactured in 1955 as a USAF C121 cargo aircraft, retired in 1977 to the USAF Arizona boneyard, returned to flight after an epic four year restoration by HARS, celebrated its 21<sup>st</sup> year at HARS, receiving as a present a complete repaint by Douglas Aerospace at Wagga, the aircraft now in superb and gleaming condition for its air show appearances in 2018.
- A project of national significance has been in progress at HARS for seven years – the complex repair of the outer 6 metres of the starboard wing of the replica Southern Cross, damaged in a landing accident in South Australia in 2002. Acquired from the S.A. government in 2009, a year of research into the materials, fixtures and processes was required before commencing repair, now almost completed under guidance from distinguished aeronautical engineer Bill Whitney. The accompanying photo was taken earlier this year on the occasion of the proof test of the wing after completion of the structural work. Restoration of the fuselage is now underway, and the three Jacobs radial engines are currently being overhauled by Historical Aircraft Engines in Queensland. First flight, probably in the second half of 2018, should be a major media event.



- The Corby Starlet single seat light aircraft, designed by aeronautical engineer John Corby in a prodigious lone effort over ten years. First flown in 1966, over 150 Starlets have been built around the world and are still being built. John delivered the 2017 RAeS Lawrence Hargrave lecture and, in recognition of his life-long contribution to aircraft design and certification in Australia (e.g. development of Avia Airtruk) he was inducted into the AAHOH in November. John and business partner Barrie Bishton have donated the Starlet mentioned above to HARS in airworthy condition.



- HARS opened a satellite museum at Parkes NSW and have transported a Caribou, Neptune, and Convair 580 to Parkes.

The above are not the only HARS activities. During 2017 HARS has seen various operations with the Catalina, Caribous and C47s in which these HARS workhorses have flown to destinations as far as the Kimberley and North Queensland.

Brian Van de Water

**First BelugaXL Transporter rolls out:** The first structurally complete airframe for the new BelugaXL rolled out from its assembly hangar in Toulouse, France on 9<sup>th</sup> January, 2018. Once operational, a fleet of these next-generation airlifters will be used to transport completed sections of Airbus aircraft among the company’s European production sites and to its final assembly lines in France, Germany and Spain. The BelugaXL is one of the most voluminous aircraft in existence, and everything about it speaks to that fact. With a bulging upper forward fuselage and enormous cargo area, the BelugaXL is hardly recognizable as the outsized airlifter version of the Airbus A330-200 jetliner from which it is derived. “We have the A330 as a foundation,” said Bertrand George, head of the BelugaXL



programme, “but many changes have been successfully designed, introduced into the aircraft and tested. Transforming an existing product into a super transporter is not a simple task.”

This initial BelugaXL is expected to be flying by mid-2018. “The whole team is really looking forward to seeing its first flight and, of course, its smiling livery,” said George, referring to the supersized smile that will be painted across the ‘face’ of the transporter, the winning design of six options presented to Airbus employees for a vote in early 2017. Before that can happen, the aircraft will undergo a months-long battery of tests after installation of its two jet engines, ensuring each of the BelugaXL’s systems function as intended. All the while, said George, “We will perform bench tests in Toulouse and Hamburg, Germany – testing our systems on flight simulators and in laboratories” as well as using hydraulic jacks to simulate flight loads on full-scale copies of specific joints between the new upper bubble and A330’s lower fuselage. “The data from these tests will be used to clear the aircraft for flight and, later on, to attain type certification,” the official pronouncement of the aircraft’s safety and airworthiness, said George. As BelugaXL no. 1 begins testing, no. 2 moves to integration

While the first structurally complete BelugaXL moves into its testing phase, the second A330 airframe to be converted into a BelugaXL arrived on schedule in Toulouse to begin its integration process. George noted that with lessons learned from the production of the first transporter, the assembly time for the second is expected to be about two months shorter.

The BelugaXL programme was launched in November 2014 to address Airbus’ increasing transport requirements. At six metres longer, one metre wider and with a payload lifting capacity six tonnes greater than the BelugaST transporter version it is replacing, the BelugaXL will be able to transport both wings of the flagship A350 XWB jetliner at once, instead of the single wing currently accommodated on the BelugaST. All told, five BelugaXLs are scheduled to enter service for Airbus’ airlift needs.

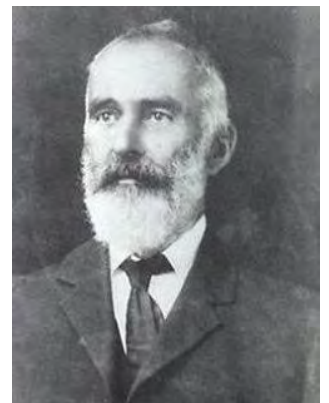
Airbus Press Office. For further details refer:

<http://www.airbus.com/newsroom/news/en/2018/01/first-belugaxl-transporter-rolls-off-assembly-line.html>

## Have you visited the grave of Lawrence Hargrave?:



Lawrence Hargrave, explorer, aeronautical pioneer and inventor, was born on 29 January 1850 at Greenwich, England second son of John Fletcher Hargrave and his wife and cousin Ann, née Hargrave. In 1856 John F. Hargrave, leaving his wife and three younger children, sailed for New South Wales with his eldest son Ralph. Lawrence went to Queen Elizabeth's School at Kirkby Lonsdale, Westmoreland. When he was 15, his father sent Ralph back to England to fetch him. They reached Sydney in the *La Hogue* on 5 November 1865; Lawrence moved into Rushcutters Bay House which his father had built.



Between 1866 and 1877 Lawrence joined a number expeditions including circumnavigating Australia and responded to the gold feverish atmosphere of the 1970s to New Guinea on a number of trips primarily as the ships’ engineer.

On 7 September 1878 Hargrave married Margaret Preston, daughter of David Johnston, a Sydney shipping clerk. Six children were born, one of whom died in infancy, Breda (1891 aged 9 months); their only son Geoffrey was killed in action at Gallipoli in May 1915; the surviving children were Margaret, Helen, Olive, and Hilda. Lawrence was elected a member of the Royal Society of New South Wales in July 1877. From 1 January 1879 he worked with H. C. Russell as an extra observer (astronomical) at Sydney Observatory. He observed the transit of Mercury in 1881, made observations of the Krakatoa explosion which led him to a theory linking it with the brilliant sunsets seen at the time, assisted Russell to measure double stars, and designed and built adding machines to facilitate their calculations.

Thanks to his father’s prudent and extensive land purchases, his sons were well provided for. Lawrence, with part of his land at Coalcliff leased out for coal-mining, found himself with a comfortable income before he was 30 and by 1883 his income from land and coal was about £1000 a year. That year, he gave up paid employment and became a gentleman-inventor.

His observation of waves and of the motion of fish, snakes and birds led Hargrave to consider flight. His theoretical approach was based on the necessity to ‘follow in the footsteps of nature’. He expounded the theory in a long paper, ‘Trochoided plane’, to the local Royal Society on 6 August 1884, the first of a series of reports on experiments in the construction of machines for flying that he carried out both at

Rushcutters Bay and later at Hillcrest House, Stanwell Park, the house he inherited from his brother Ralph and to which he moved in 1893. Hargrave's early experiments were with the means of propulsion; his goal, the flapping motion of birds' wings, 'hamstrung his aeronautical work throughout his life'. Experiments on the shape of the supporting surfaces followed and on their soaring behaviour in different winds. His early models were monoplanes, powered by clockwork or rubber bands. From June 1887, when he began to work on the problem of a machine heavy enough to carry a man's weight, he constructed several types of engines, powered by petrol and compressed air. In 1889 he built the compressed air engine powered by an arrangement of three rotating cylinders which was one of the great inventions of his career.

From 1893 Hargrave began the investigations which led him to his second great invention, the box kite. He had begun experiments into the behaviour of curved surfaces for the wings of his flying machines in 1892, inspired by the work of the American engineer Octave Chanute, who had given them up. Now, further research convinced Lawrence that cellular or box kites had greater stability and lift than monoplanes. Corresponding with aeronautical experimenters in Europe and the USA, Hargrave was fired with the prospect of himself flying in one of his machines and, after a number of trials, on 12 November 1894, lifted himself from the beach at Stanwell Park in a four kite construction, attached to the ground by piano wire. When the first European aircraft were built, they too used Hargrave-type box kites for their supporting surface.

Hargrave died on 14 July, 1915 at Darlinghurst from peritonitis following an operation for appendicitis and was buried in **Waverley cemetery, in the General Ordinary Section 9, Allotment 1117 (4<sup>th</sup> isle from the large 'round about' Memorial Garden)**. (The plot also contains the remains of a grandchild stillborn in 1923 by his daughter Margaret.)

Survived by his wife and four daughters, he left an estate valued for probate at £20,489. Margaret took her youngest daughter and her husband's papers, diaries and journals to England, where she settled. Today, his surviving models are exhibited at the Powerhouse Museum, his name is commemorated in many places and his 'dark, austere bearded features' framed by his box-kites, are engraved on every \$20 note.



At the beginning of 2000 the state of Lawrence's grave was brought to the attention of the Australian Division who in conjunction with the Waverley Cemetery jointly arranged for his grave to be restored. On Thursday 13<sup>th</sup> December, 2001 a formal 'Unveiling of the Restored Memorial to Lawrence Hargrave' took place and was addressed by the then President of the Australian Division, Captain Ian Watkins. His presentation was entitled 'Lawrence Hargrave, Explorer, Inventor, and Australia's Pioneer Aeronautical Scientist'. The plaque on the grave (pictured) records the role of the Australian Division in the restoration.

**Society Merchandise for Sale:** Sydney branch has a selection of Society Merchandise for sale at its regular monthly meetings. Items include Society Ties, Pins, Lapel Badges, Silver Kestrel Brooches, and Mugs.



Our Sales Director, David Adkins accept cash, cheques and credit cards through PayPal.



**Aerospace Websites:** [www.57rescuecanada.com](http://www.57rescuecanada.com) : Follow Capt. Karl Kjarsgaard's adventures to recover Halifax bomber LW170 which is resting beneath 5000ft of water off the Irish coast;  
[www.adastron.com/707/updates/updates.htm](http://www.adastron.com/707/updates/updates.htm) : Diary of Boeing 707-138B XBA formally Qantas EBA.  
[www.airshow.com.au](http://www.airshow.com.au) [www.atsb.gov.au](http://www.atsb.gov.au) [www.aviationmuseum.com.au](http://www.aviationmuseum.com.au) - Temora Aviation Museum;  
<http://boxkite2014.org/book/book.htm> - The Boxkite project.  
[https://en.wikipedia.org/wiki/Rolls-Royce\\_Trent](https://en.wikipedia.org/wiki/Rolls-Royce_Trent)  
<http://hars.org.au/> Historical Aircraft Restoration Society  
<https://herox.com/SpacePoop> The Space Poop Challenge [www.powerhousemuseum.com/whatson](http://www.powerhousemuseum.com/whatson)  
<https://qfom.com.au/> Qantas Founders Museum, Longreach, Qld <http://www.singaporeairshow.com/>

**Diary: Feb 20:** The 2018 Aviation/Aerospace Australia Leadership and Excellence Awards - Nominations are now open! Applications close 20 February 2018. For further details refer: <https://www.airspaceawards.org.au/a18-awards/>



**April 4:** International Eminent Speaker, Dr Susan X. Ying, FRAeS, FAIAA, Chief Integration Officer, Commercial Aircraft Corporation of China, also known as COMAC.

**July 3-6:** Abstracts containing no more than 300 words are now invited for the 2018 Aircraft Airworthiness and Sustainment (Australia) Conference, a non-profit event for the benefit of all those involved in sustaining our fleets, both Civil and Military, safely and economically through their lifecycle. The Conference will be held at the Brisbane Convention and Exhibition Centre. Closing date for abstracts is 13 April. For further details refer: <http://www.ageingaircraft.com.au>

**Sept 9-14, 2018:** 31<sup>st</sup> Congress of the International Council of the Aeronautical Sciences, Belo Horizonte, Brazil. Refer details: <http://icas.org/media/ICAS2018CallforPapers.pdf>

**Oct 1-5, 2018:** 69<sup>th</sup> Annual International Astronautical Congress will take place in Bremen, Germany. Call for Abstracts is now open and closes 28 February 2018. For further details refer: <https://iafastro.directory/iac/browse/IAC-18/catalog-technical-programme>

**Feb 9, 2019:** The fiftieth anniversary of the first Boeing 747 flight.

**July 20, 2019:** The fiftieth anniversary of the first men walking on the moon.

Proudly Supported by Corporate Partners of the Australian Division



Australian Government  
Civil Aviation Safety Authority



## 2017 Annual General Meeting

### Royal Aeronautical Society Australian Division Sydney Branch Inc

Date: **Wednesday 7<sup>th</sup> March 2018** Time: **commencing 18:00 hours - sharp**

Venue: **New Law School Lecture Theatre 101 Eastern Avenue, University of Sydney**

To view map please click/copy and paste into your web browser the following:

[https://www.google.com/maps/place/Sydney+Law+School/@-33.8868216,151.1889231,17z/data=!4m1!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+\(F10\),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US](https://www.google.com/maps/place/Sydney+Law+School/@-33.8868216,151.1889231,17z/data=!4m1!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+(F10),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US)

Refreshments will be available **prior** to the commencement of the meeting.

### 2017 Annual General Meeting Agenda

**PRESENT:** Members to sign attendance book.

**APOLOGIES:** **PREVIOUS MINUTES:** Minutes of the 2016 AGM, discussion and motion to accept.

**BUSINESS ARISING:** Discussion and motion to accept.

**BRANCH RULES:** Updated Branch Rules - for approval. The updated Sydney Branch Rules are available from our website: <http://www.raes.org.au/public/37/files/About/Sydney%20Branch/Sydney-Branch-Rules-Jan-2018.docx>

The New Rules have been updated to comply with the Associations Incorporation Act 2009 as amended. In summary, the Rules include a new section entitled 'Resolution of Disputes', and the 'Election of Committee' has been amended to elect Committee Members in rotation for a period of two years. Printed copies will be available prior to the AGM.

**CHAIRMAN'S REPORT:** Annual Report, discussion and motion to accept.

**TREASURER'S REPORT:** Presentation of 2017 Financial Statement. (Audited report will be sent with the April, 2018 Newsletter). Discussion and motion to accept.

**ANNUAL ELECTIONS:** The Hon Secretary to report on Nominations received for the classes of Committee by the due date 2<sup>nd</sup> February 2018 and, should there have been more Nominations received than positions available for any of the classes, the result of elections.

**APPOINTMENT OF HONORARY AUDITOR:** Mr Stephen Howard, Harrison and Howard.

**GENERAL BUSINESS:** Any business raised and accepted by the Chairman.

**CLOSE OF AGM:** Thank you for attending the AGM and the Committee looks forward to your continued support.

**2018 Committee Nomination Form: Should you wish to nominate for the 2018 Committee, please complete the Nomination Form below and follow the instructions.**

### 2018 Committee Nomination Form

Send to: The Honorary Secretary, RAeS Aust Division Sydney Branch Inc, 88 Trafalgar Street, Annandale, NSW 2038 or Email: [sydneybranch@raes.org.au](mailto:sydneybranch@raes.org.au) (please ensure that Nomination Forms have been correctly signed)

The 2017<sup>th</sup> Sydney Branch Annual General Meeting is to be held on Wednesday 7<sup>th</sup> March 2018, at 18:00 hours, in the **New Law School Lecture Theatre 101, Eastern Avenue, University of Sydney**. In accordance with the Branch Rules of the Sydney Branch of the Royal Aeronautical Society Inc, nominations for the Committee are called and shall be made in writing and signed by one member of the Branch and countersigned by the Nominee. The Committee consists of one Chairman, 11 Ordinary Committee Members and 2 Student Representatives (in total 14 people).

**Please forward completed Nomination Forms to the Branch Honorary Secretary at the address above by Wednesday 14<sup>th</sup> February, 2018 which is at least twenty one (21) days prior to the 2017 Annual General Meeting.**

I .....(Nominator's Full Name)

of .....(Nominator's Address)

nominate .....(Nominee's Full name)

of .....(Nominee's Address)

as an: Ordinary Committee Member / Student Representative / Chairman (*delete 2 of these classes as appropriate*) for the Sydney Branch of the Royal Aeronautical Society for the Year 2018.

**Signed:**.....**Date:**.....**Member Number:**.....(**Nominator**)

**Signed:** .....**Date:** .....**Member Number:**.....(**Nominee**)

**Tel contact:** .....(**Nominee**) **email:** .....(**Nominee**)

#### **NOTE: PLEASE USE ONE FORM FOR EACH NOMINATION**

\*\*\*\*\*  
\*\*\*\*\*

**Office Use Only:** Nomination received by the Sydney Branch Hon Sec:.....(*Initials*).....(*Date*)