

Newsletter of the Australian Society for History of Engineering and Technology

Election of office bearers and committee members

At the close of the ASHET annual general meeting on Thursday 23 April 2009, all the present office bears and committee members retire. Office bearers and committee members for the coming year will be elected at the annual general meeting.

Nominations are called for election to the following positions:

president,

senior vice-president,

vice president,

secretary,

treasurer,

three ordinary committee members.

Nominations must be in writing, signed by two members of ASHET and accompanied by the written consent of the candidate. They must reach the secretary by Thursday 16 April, seven days before the date of the meeting on 23 April. Nominations may be submitted using the form attached.

ASHET annual general meeting and special general meeting

ASHET's 2009 annual general meeting and a special general meeting will be held at History House, 133 Macquarie Street, Sydney, on **Thursday 23 April at 6 p.m**. Light refreshments will be served at 5.30 p.m. before the meetings. The meetings, expected to be brief, will be immediately followed by a joint meeting of ASHET and the Royal Australian Historical Society, with a talk by Alan Perry.

Each member is entitled to appoint another member as proxy by notice given to ASHET's public officer no later than 24 hours before the time of the meetings. The notice is to be in the form set out in the attachment. ASHET's public officer is the secretary, Ian Arthur. ASHET's Constitution requires that no member may hold more than five proxies.

The following business will be conducted at the annual general meeting:

Confirm the minutes of the last preceding annual general meeting, held in 2007:

Receive committee report on activities during 2006:

Receive and consider financial statement:

Elect office bearers and ordinary committee members.

In accordance with ASHET's Constitution no other business may be conducted at the annual general meeting.

Copies of the the committee's report and the financial statement that will be presented to the meeting are included in this issue of *ASHET News*.

Following the annual general meeting, a special general meeting, convened by ASHET's committee, will be held to consider the following motion which has been submitted by the committee:

'That Clause 4 of ASHET's Constitution, which lists the conditions under which a person ceases to be a member, be amended by adding a fourth condition (d) for cessation of membership, so the clause would read:

4 Cessation of membership

A person ceases to be a member of the association if the person:

- (a) dies, or
- (b) resigns membership, or
- (c) is expelled from the association, or
- (d) fails to pay annual membership fees for two or more consecutive years.'

Under ASHET's Constitution as it stands at present, a member of ASHET who fails to pay annual membership fees remains a member until one of the conditions (a), (b) or (c) above applies, and remains liable for payment of the unpaid subscriptions and any other debts to ASHET. The effect of the proposed change is that membership would cease when two consecutive years annual subscriptions remain unpaid.

This motion, if passed by a majority of at least three quarters of the members who vote in person or by proxy at the meeting and who are entitled to vote, will become a special resolution of ASHET and will change ASHET's Constitution once the required form has been lodged with and accepted by the Office of Fair Trading.

A member or proxy is not entitled to vote at a general meeting of ASHET unless all money due and payable by the member or proxy to ASHET has been paid, other than the amount of the annual subscription payable in respect of the current year.

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Next ASHET event

Tuesday 7 April, 2009 (National Trust Heritage Festival)

Talk by Fiona Burn

Eye on the sky: Astronomy records in the National Archives

In her talk, Fiona Burn will look at the records relating to astronomy that are in the National Archives, including those of the Sydney Observatory, the Parramatta Observatory, CSIRO Parkes Radio Telescope, the Anglo-Australian Observatory and Mount Stromlo Observatory.

Fiona Burn is Assistant Director, Access and Communication, in the Sydney office of National Archives of Australia. She is a member of the History Council of New South Wales, representing the Australian Society of Archivists.

This is a joint activity of ASHET and the Royal Australian Historical Society (RAHS), and the National Archives of Australia.

Venue: History House, 133 Macquarie Street, Sydney

Time: 5.30 for 6 pm

Cost: \$7.00 Includes light refreshments on arrival **Bookings**: phone RAHS on (02) 9247 8001 or email

history@rahs.org.au.

More ASHET events

Thursday 23 April, 2009

ASHET Annual General Meeting Talk by Alan Perry Changes in Furniture Manufacture in Australia during the 20th Century

Furniture made in the early 1900s was almost exclusively of solid timber. Oak and maple were used in the reproduction of early Jacobean, Gothic and Queen Anne style furniture and some Australian timbers such as blackwood, silky oak, cedar and walnut were used during the Art Nouveau and Art Deco Period. Then, in the 1930s and 1940s, plywood and veneered solid core were introduced. The influence of Scandanavian and Danish design in the 1950s and 1960s and the need for a new material in keeping with the flat panel design, saw the introduction of particle board to furniture manufacture. Then new technology in computer-aided manufacture and revolutionary finishes changed the industry again.

Alan Perry, who started as an apprentice cabinetmaker at Ricketts and Thorp P/L, furniture manufacturer, in 1954, is a retired TAFE teacher and a founding member of the Furniture History Society [Australasia]. Alan will trace the changes to 20th Century furniture manufacture in this talk.

His talk, to a joint meeting of ASHET and the Royal Australian Historical Society (RAHS), will immediately follow the brief

ASHET annual general meeting and special general meeting.

Venue: History House, 133 Macquarie Street, Sydney

Time: 5.30 for 6 pm

Cost: \$7.00 Includes light refreshments on arrival **Bookings**: phone RAHS on (02) 9247 8001 or email

history@rahs.org.au.

Tuesday 19 May, 2009

Talk by Jean Rice Eveleigh Railway Carriage Workshops

The historic railway workshops, built between 1880 and 1887 between Redfern and MacDonaldtown stations in Sydney's inner suburbs, included the locomotive workshops and the carriage and wagon workshops. They employed a workforce of thousands. The former workshop buildings are now part of the Australian Technology Park.

Jean Rice, a conservation architect, worked on the adaptive reuse of the Eveleigh carriage Workshops as the Contemporary Performing Arts centre, opened in January 2007. In her talk she will describe how the site's heritage issues were balanced with the needs of a performance space.

This is a joint activity of ASHET and the Royal Australian Historical Society (RAHS).

Venue: History House, 133 Macquarie Street, Sydney

Time: 5.30 for 6 pm

Cost: \$7.00 Includes light refreshments on arrival **Bookings**: phone RAHS on (02) 9247 8001 or email

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Wednesday 24 June, 2009

Talk by Frank Nicholas Charles Darwin's visit to Australia

This year we celebrate the 200th anniversary of the birth of Charles Darwin in 1809, and the 150th anniversary of publication of his greatest work *On the origin of species* in 1859.

In 1831 Darwin accepted the offer of a place, self-funded, on HMS *Beagle*, under Captain Robert FitzRoy, which was to survey the coast of South America. During the voyage, which lasted nearly five years, the *Beagle* visited Australia in 1836, providing Darwin with the opportunity to observe its geology and unique wildlife over two months.

Emeritus Professor Frank Nicholas, of the University of Sydney, is co-author of the book Charles Darwin in Australia, first published in 1989, and recently republished in an Anniversary Edition.

This is a joint activity of ASHET and the Royal Australian Historical Society (RAHS).

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Items for consideration at the ASHET annual general meeting to be held on Thrsday 23 April 2009

Committee Annual Report 2008

ASHET membership

At the end of 2008, ASHET had 95 members, a net increase of three over the year. In addition there were 23 registered members of families. Of the members at the end of 2008, 72 lived in the Sydney area, 11 elsewhere in NSW and 14 in other states and territories of Australia.

Meetings and other activities

ASHET held a series of meetings during 2008 at History House in Sydney jointly with RAHS, and conducted visits to places of interest. The events were as follows:

Thursday 21 February 2008 Talk by Tony Griffiths: *Arming for war – surviving in peace: Lithgow Small Arms Factory, 1914–1960*

Wednesday 12 March 2008 Talk by Tony Dawson: *Line of sight: the trigonometrical survey of Sydney's north*

Tuesday 22 April, 2008 ASHET Annual General Meeting: Talk by Gregory Blaxell: *Halvorsen Boatbuilders*

Tuesday 27 May 2008 Talk by Tim Smith Gallipoli Sub AE2: Managing Australia's significant WW I Dardanelles relic

Tuesday 17 June 2008 Talk by Warwick Abadee: *The golden years of the magnificent flying boats*

Tuesday 22 July 2008 Talk by Bob McKillop: *Central Railway Station: politics, design,* use and evolution, 1906 to 2006

Thursday 11 September 2008 (History Week)
Talk by Michael Clarke: *Devastation, Disaster and Distress ñ living with floods in the lower Hunter Valley*

Tuesday 25 November 2008 Talk by Dennis Quinlan: *A Pocket History of Automotive Instrumentation*

A week-long tour to Broken Hill, originally planned for 2008, was deferred to 2009 to allow more time for organization. A planned and advertised tour of the Printing Museum at Penrith as cancelled owing to an insufficient number of registrations.

Income and expenditure statement for the year ended 31 December 2008

INCOME	2008	2007
Members' subscriptions	2,150	1,810
Donations	0	6,910
Income from meetings & activities (net of expenses)	612	337
Bank interest	819	289
	3,581	9,346
Less: EXPENDITURE		
Insurance	412	418
Telephone & internet	479	5
Affiliation fees	165	102
Postage	78	25
Stationery & office supplies	169	89
Filing fees	44	43
Bank fees	5	0
Other expenses	0	40
Table of contents project	0	200
	1,352	922
SURPLUS for year	4.4.04.0	
Balance brought forward	14,910	6,486
Surplus	2,229	8,424
Balance carried forward	17,139	14,910
Represented by:		
Cash at bank	978	9,672
Cash at bank – on deposit	16,161	5,358
Less Subscriptions received in advance	0	-120
•	17,139	6,486

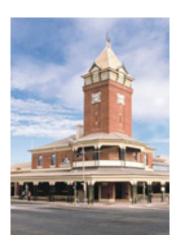
RAHS & ASHET Study Tour to the NSW Outback

The RAHS and ASHET are organising a study tour to the NSW outback in late August 2009 which will explore the distinctive history and heritage of the far-west of NSW. Our tour offers diverse experiences such as inspections of notable buildings, structures, ruins, and monuments; visits to museums, galleries, archives, parks, gardens, wetlands, sanctuaries, lookouts, heritage centres, walking trails of natural and cultural heritage; an underground mine tour and a wetlands cruise.

Themes of special interest in the NSW outback include its landscapes, flora and fauna, indigenous cultures, parks and reserves, labour struggles, water supply systems, land tenure, environmental degradation and restoration, and the recent growth in cultural tourism.

We are planning to travel in a 5-star 44-seat coach with reclining armchair seats, sound system with DVD/CD and PA, air-conditioning, storage compartments for luggage, and a toilet. Accommodation is usually will be of 3-star standard and is always centrally located allowing tour members to explore these fascinating outback towns on foot during their 'free time'.

Core 8 day Tour: Sydney - Cobar - Broken Hill



The tour will leave Sydney by coach on Monday 17 August, travelling via Cobar and Wilcannia to Broken Hill and to Silverton and Menindee. During the five days in Broken Hill, group visits will include: Line of Lode Lookout and Miners' Memorial. Trades Hall and other heritage buildings, Daydream Mine & Smelter with an underground mine tour, the Photo Recollections Gallery, the Sculpture Symposium and the Royal Flying Doctor base. Local collections visited will include the old Synagogue where the archives of Broken Hill Historical Society are housed, the City Library's Outback

Archives, the GeoCentre mining & Minerals Museum, and the Railway & Historical Museum.

Broken Hill has an extraordinary environmental history which we will explore through visits to the Regeneration Reserves, an arboretum, and to the Living Desert Reserve which includes a Flora & Fauna Sanctuary, a wildflower garden, a Cultural (archaeological) Walking Trail, and the well-known Sculpture Symposium.

One day will be spent in and around Silverton with a visit to the Daydream Mine & Smelter including an underground mine tour, then a tour of the township, visits to Silverton Gaol Museum and Silverton Pub, and stops at Umberumberka Dam and Mundi Mundi Plains Lookout on the way back to Broken Hill.

Free time during the stay in Broken Hill will allow for individual interests to be fulfilled with visits to other galleries, cultural centres, or sites in town.

As well, there will be a one day coach tour to Menindee Lakes Main Weir with a cruise of wetlands on MV River Lady and a visit to the Pumping Station. We will then visit Kinchega National Park and the shearing shed at Kinchega Station before driving around Menindee and back to Broken Hill.

This core part of the tour will end in Broken Hill on **Monday 24 August** so that participants can then return to Sydney by train [at their own expense] on **Tuesday 25 August**. This core tour will therefore be eight days and eight nights, excluding the return train trip back to Sydney.

Estimated Cost: Tour fees for RAHS and ASHET members for the core eight day tour are about \$1200 per person (sharing twin or double rooms) and about \$1550 per person in single rooms, costed on 30 participants. These fees include 8 nights accommodation in 3-star motels, all breakfasts, four dinners, two lunches, and fees for group visits to museums, site tours, and cruises. These fees do not include the train fare from Broken Hill to Sydney.

Core 8 day Tour + 5 day extension: Sydney -Cobar - Broken Hill - Wentworth - Hay - Sydney

Participants may elect to continue their outback experience by taking up the option of a five day extension which will be at an extra cost. On Tuesday, the extension tour will continue when the coach travels from Broken Hill to Wentworth on the Murray and Darling Rivers for a three night stay. We will visit Wentworth Pioneer Museum, the Old Gaol, the wharf, view the relic of the riverboat PS Ruby, Junction Island Nature Reserve, the sandhills, and the Stanley Winery at Buronga. We will cross the river to Mildura for a day to visit to Psyche Pump Station & Kings Billabong Reserve, the Visitor Centre with an exhibition about Chaffey Brothers, Rio Vista House, Grand Hotel, and have a river cruise on the PS Melbourne to view the rivers, Lock 11 & the Weir. We also travel to Red Cliffs to visit Big Lizzie traction engine.

As a special part of this extension tour, the coach will travel to Mungo National Park, view the exhibition at the Visitors Centre, tour the archaeological sites before travelling across Lake Mungo. There we will follow the walking trail around Walls of China rock features. On the return trip to Wentworth we will stop at the Australian Inland Botanic Gardens at Buronga.

On the return trip to Sydney, we will stay one night in Hay and visit Shear Outback, the shearing & wool heritage centre, to visit the exhibitions and woolshed, and later watch the evening sound & light show about shearing history. The tour ends when the coach returns to Sydney on Saturday 29 August.

Estimated Cost: Tour fees for the core 8 day tour + 5 day extension are about \$1,750 per person (sharing twin or double rooms) and about \$2,300 per person in single rooms, costed on 20 participants. These fees include 12 nights accommodation in 3-star motels, all breakfasts, two dinners, four lunches, and fees for group visits to museums, site tours, and cruises.

Expressions of Interest

If you are interested in joining the tour, please email us on executive@ rahs.org.au with your contact details (name, phone, and preferred email); likely accommodation needs (double, twin share, or single); and preference for the core 8 day tour or the core 8 day tour + 5 day extension option.

Please make your expression of interest by **Friday 17 April** so we can progress our planning. If you have questions, please call Mari on 9247 8001 or Ian Arthur on 9958 8397.



1959: Australia enters the jet age Ian Arthur

On 2 July, *City of Canberra* (Qantas Boeing 707-138, VH-EBB). arrived at Mascot on its delivery flight, the first jet airliner to reach Australia. Three days later it flew to Avalon for crew training. The press commented on its high noise level and black fumes on take-off.

The first commercial flight left Sydney for San Francisco on 29 July. Qantas was the first international airline, outside the USA, to fly the Boeing 707 in commercial service. At the time Qantas took delivery, American operators had 41 707s in service and had logged 30,000 hours of commercial operations.

In September, Qantas extended the San Francisco service through New York to London to become the third airline to provide a jet service across the Atlantic, along with BOAC, flying De Havilland Comet 4s, and Pan Am, Boeing 707s. On 15 October Qantas introduced three 707 services on the Kangaroo Route to London via the Middle East, and on 27 October commenced its round-the-world jet service.

First passenger jet, the De Havilland Comet 1

Years of planning had preceded these landmark events. The first jet aircraft designed for commercial passenger service, the British De Havilland Comet 1, first flew as a prototype in 1949 and it was on show at Farnborough that year, before the start of its flight trials. By the next Farnborough Air show, in summer 1950, a second prototype had been completed, and its flight was one of the highlights of the show. The first production Comet flew in January 1951, and BOAC began a scheduled Comet service between London and Johannesburg shortly after. In the first year 30,000 passengers flew in Comets. With their higher speed and faster climb compared with advanced piston-engine aircraft such as the Douglas DC-6, they could almost halve flight times. For passengers they were comparatively quiet and free of vibration. Jet passenger aircraft had a bright future.

Boeing men at Farnborough in 1950 included Bill Allen, president of the company, and Maynard Pennell, chief of preliminary design. Pennell, who had come to Boeing from Douglas, was keen for Boeing to build a jet passenger aircraft. After the air show, they visited De Havilland and thought it looked 'like a small town auto-repair shop' compared with Boeing's huge plant and production line at Seattle. Allen asked Pennell what he thought of the Comet. 'We could do better' was Pennell's reply.

Boeing's strength was in large military aircraft, notably the wartime B-29 Super Fortress, of which it built 3,970, not commercial airliners. In 1945, when Allen, who had been 20 years with Boeing as attorney, became president of the company, Boeing had two major new projects; one a new four engine airliner, the Stratocruiser, not a jet, based on the wings and tail of the B-29 bomber; the other the B-47 jet bomber, a totally new aircraft for the military. Four companies including Boeing had been invited to submit designs for the B-47.

The first Boeing jets

The Stratocruisier was not a great success, and did little to convince the airlines that Being was a serious contender against Douglas with its DC6 and Lockheed with its Constellation, both very successful commercial airliners. Boeing put a tremendous effort into the development of the B-47. It built its own large wind tunnel, an innovation for an aircraft company, and embarked on an intensive program to optimise the wing design.

Boeing's B-47 had two innovations that marked it out from its competitors, swept wings and six engines mounted in pods under the wings. The military were reluctant to make a commitment. The turning point came after a demonstration flight for the military just at the start of the cold war. General Kenneth B. Wolfe, who had been on the flight,

was impressed and asked Boeing for ten B-47s as soon as possible. The formal contract was signed on 3 September 1948

The B-47 was not without problems. A serious one was its tendency to involuntarily go into a series of S turns, a phenomenon called the 'Dutch roll'. The solution lay in changes to the design of the swept wing, and the addition of a device, technically called a yaw damper, and colloquially known as 'Little Herbie'. To this day, every aircraft with this wing form is fitted with a yaw damper.

The production model B-47 first flew in summer 1950. Allen's made his first jet flight in one of the early production aircraft and it made him aware of the possibilities for a jet airliner. It took him several months decide. When he did, Pennell was ready with a concept for an airliner based on the B-47, with swept wings and engines in pods. It was very different from the Comet.



The 707 and the Dash-80

Pennell and the team at Boeing were encouraged to sell the concept to the airlines. For months they had no success. But Allen became an enthusiast. He called for a total commitment from the company to sell a jetliner to the airlines. It would be a new design, not just a version of the B-47, and called the 707. Pennell worked closely with George Schairer, Boeing's swept wing specialist, to produce a detailed design early in 1952. On 22 April, Boeing's board approved building a prototype ahead of any commitment from the airlines. To confuse the competition, the project was numbered 367-80, implying that the new aircraft was a derivative of the Stratocruiser. It became known as 'Dash-80'.

The Dash-80 was rolled out on 15 May 1954, and first flew on Boeing's 38th birthday, 15 July. On its second flight, the brakes failed and it ended up off the runway with its nose in a ditch. Boeing's competitors were allowed to see the Dash-80 shortly afterwards, and were not greatly impressed. Lockheed was not convinced of the market prospects for a jet airliner, and Douglas was heavily committed to its DC-7 airliner. When Lord Hives, head of Rolls Royce saw the Dash-80, his comment was 'This is the end of British aviation'. He explained that the Comet crashes had discouraged the British from building more jets, and without them he believed the industry had no future.

A highlight of the summer season in Seattle was the Gold Cup race for hydroplanes. Allen used the 1955 race to promote the commercial jet to the airlines. Boeing invited industry leaders to Seattle and arranged for the Dash-80 to fly over the lake during the event. 'Tex' Johnston, Boeing's chief test pilot, obtained permission to do a low altitude high speed run over the lake. In front of a crowd of 200,000, he executed two barrel rolls over the lake, flying the huge plane upside down. Afterwards he was carpeted by Allen for taking undue risks with Boeing's only Dash-80, the company's passport to the future. Johnston explained that the roll was a routine manoeuvre that placed less stress on the aircraft than the proving tests that he ha already undertaken. Johnston kept his job.

Once Boeing engaged in serious discussions with the airlines about buying the 707, it became clear that, for commercial success, it needed more seats than the 132 inch wide body of the Dash-80 could accommodate. Boeing decided to increase the width to 144 inches, permitting six abreast seating.

Selling the 707

Then Douglas began to talk to the airlines about a jet, the DC-8, similar in almost every way to the 707, but larger, with a 147 inch body. In competition with Boeing, Douglas won an order for the DC-8 from United Airlines. The Boeing men realised they had to do better. They found that it would be possible to increase the width of the 707 by three inches, to 148 inches, without a major redesign. Allen approved the change, on the eve of a pitch to American Airlines, again competing against Douglas. This time Boeing won the order. This version was designated 707-120.

Boeing knew that Pan Am would order some 707s, simply because they wanted to be first to fly one of the big jets. But Pan Am was still not satisfied with the capability of the 707, and ordered only six, along with 25 Douglas DC-8s. Pan Am would order 14 more 707s if Boeing could sufficiently increase the range and payload.

To satisfy Pan Am, major redesign would be required, including a new wing. A team was assembled to develop a new wing design, requiring extensive work in the wind tunnel. This was achieved in the remarkably short time of six weeks. The resulting aircraft was the 707-320. With Pratt and Whitney's new JT-4 fanjet engine, it became the 707-320B, an aircraft clearly superior to the DC-8. Over four years from 1957, Boeing sold 127 707s; Douglas sold 47 DC-8s in the same period. The 707 remained in production until 1971, and altogether Boeing sold 1,010. Douglas sold a total of 556 DC-8s, including 262 of the stretched version introduced in 1965.

The 707 first flew on 20 December 1957. Its first scheduled commercial flight was with Pan Am, from London to Paris, on 13 October 1958.

Qantas plans for the jet age

In 1955, Qantas expected that commercial jet aircraft, including the 707, DC-8 and Comet 4, would be in service by 1959, and that Qantas would need jets to compete on its long distance routes. BOAC had already ordered twenty Comet 4s and planned to use some of them on the Kangaroo route to Australia. Qantas sent assistant general manager 'Scottie' Allen overseas to evaluate new aircraft. He reported to the board that the American jets, the 707 and the DC-8, could not be considered, as they were large and best suited to high density routes. The smaller Comet 4, though less economic, was more suited to Qantas routes, He considered it still too early to make a recommendation on what aircraft should replace the Super G Constellations around 1959.

By the end of 1955, the major airlines were placing orders for jet aircraft. In this round of buying, Douglas had orders for 69 DC-6s, Boeing had orders for 40 707s and De Havilland had one order, from BOAC, for 20 Comet 4s.

In February 1956, Qantas general manager Cedric Turner made a personal approach to Bill Allen, president of Boeing, to enquire about price and availability of 707s, explaining that an order would not quickly be forthcoming because Qantas required Australian government approval for all major equipment purchases. Boeing quickly offered its 707-320 and quoted a price, with delivery dates March to August 1960.

As discussions with aircraft manufactures got down to details, it became apparent that Qantas had unique requirements, one being that the aircraft must be capable of flying the sector from Nadi, Fiji, to Honolulu, taking off from the short 7,000 foot runway at Nadi. None of the available jet aircraft could meet this requirement without being modified in some way. Only Boeing offered a solution attractive to Qantas; a 707-120, with a body cut down by ten feet, and fitted with a military version of the Pratt and Whitney JT3C engine, that had higher thrust than the civil version. Boeing offered a 1959 delivery of these special aircraft. On 6 September 1956, with government approval, Qantas ordered seven, designated Boeing 707-138s, with deliveries from May 1959. Qantas was the only airline in the world to buy these special aircraft.

Had Qantas made the right decision?

In 1958, Dr. Dick Shaw, formerly superintendent of aeronautical engineering at the Australian Department of Civil Aviation, joined Qantas as technical adviser. In November that year he presented to the board a detailed analysis of the De Havilland Comet 4 and the Boeing 707. He noted that the Comet 4 had a better ratio of power to weight than the Boeing 707-120, and a lower wing loading, allowing it to take off from a shorter runway and climb faster, so it was operationally more flexible. On the other hand the 707 had greater speed and range. Shaw regarded the 707-120 as having barely enough thrust to meet its performance guarantees, and that until better engines became available, it would have only a marginally better performance than the Comet 4. He considered the 707 design, with the engines in pods under the wings, to be inherently safer than the Comet, which had engines embedded in the wings.

Shaw expressed high regard for Boeing's experience, its record of building safe and successful aircraft, its wind-tunnel resources and advanced engineering, rating it in all these respects far superior to De Havilland. He reported that 'the overall balance is overwhelmingly in favour of Boeing as things now stand, and one which shows every prospect of changing in favour of Boeing as the performance problems are overcome'.

Shaw's analysis proved to be correct. The new fanjet engines became available shortly afterwards, and in March 1959 Qantas decided to retrofit its recently delivered 707-318 aircraft with Pratt and Whitney JT3D fanjet engines and to order three more of the707-318 series. Qantas later purchased one more 707-138, and then 21 of the larger 707-338 series. Qantas' decision back in 1956 to plan its future long distance international services around the Boeing 707 aircraft was vindicated. Qantas operated its last 707 flight, between Auckland and Sydney, in March 1979. By this time all of its international routes were flying Boeing 747s

In 2006, the first Qantas 707 registered, VH-XBA, returned to Australia for display in the Qantas Founders Outback Museum at Longreach Queensland.

Sources and further reading

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Clive Irving, *Wide-body: the triumph of the 747*, William Morrow and Company, Inc., New York, 1993.

Wikipedia, http://en.wikipedia.org/, 2009.

About ASHET

ASHET, the Australian Society for History of Engineering and Technology, is a non-profit society, incorporated in New South Wales and affiliated with the Royal Australian Historical Society.

ASHET was formed in Sydney in 2003. Its objects are to encourage and promote community interest and education in the history of engineering and technology in Australia. ASHET currently has 95 members throughout Australia.

For more information, go to the ASHET website http://www.ashet.org. au/.

ASHET News is the newsletter of the Australian Society for History of Engineering and Technology Incorporated ABN 47 874 656 639

ISSN 1835-5943

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