FABULOUS FLYING BOATS

A HISTORY OF THE WORLD'S PASSENGER FLYING BOATS

LESLIE DAWSON

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AVIATION

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Contents

To those whose lives and memories created this book.

What is a flying boat?	–	An aeroplane supported by a hull on the water.
And a float plane?	–	An aeroplane fitted with floats
And a seaplane?	–	It can be either.
Isn't that confusing?	–	Possibly

Acknowledgements

As someone drawn to clear sparkling water and to the lure of a windsock beckoning from a summer green airstrip, I wanted to learn more about the pioneers, passengers and piloting experiences of a largely forgotten and unique form of flying that utilised the natural waters that separate the land masses and islands of our world. Many kindly gave of their time to portray events enacted a good fifty years before our meeting, a part of their youth, pride and a way of life, tempered by the times, while invention and controlling factors have inevitably combined to ensure the like will never come again.

I have attempted to keep a chronological list of the individuals and organisations that kindly aided my research and enquiries, frequently with personal anecdotes and treasured photographs, and though my appreciation would have been given at the time, I can only apologise for the oversight if your contribution does not appear amongst the following – but here goes.

Michael Cobham sanctioned pictures of his parents, Sir Alan and Lady Cobham, and the refuelling trials, the Poole Plate and Aeromaritime poster were supplied by Katy Armstrong of Millers Antiques and Collectibles, the Museum of Transport and Technology (Auckland) sent photos of their model of Richard Pearse and his aeroplane and the restored *Aranui*, and Roy Tassell a nice shot of the Supermarine Sea Eagle.

I first learnt what it was like to fly a twenty ton flying boat at the harbour side home of Captain Tommy and Connie Rose, followed by a meeting with Captain Bob and Audrey Harwood. Their different entries into BOAC formed the basis of my first authorship on flying boats (*Wings Over Dorset*, published by Dorset Publishing Company) and I thank Bernard Dyer (another former instructor with 622 Gliding School) for putting me in touch with Peter Rose who passed me on to brother Christopher in Australia, who very, very kindly perused his father's log book in detail (particularly the 'remarks' column) and then went through the photograph collection. I also have to thank Audrey for allowing me to

collate Bobs log books and for her search for the missing one!

A drive to Orcheston in Wiltshire to meet Mrs Harman, former Woman Seaman Mollie Ann Skinner, revealed a box full of publicity pictures and a small, clandestine photo (cameras were not encouraged during the war) of *Hailsham's* last landing at Poole. And she still had her 'woolly pully'. Colleague Eileen Wigg wrote with details of her own service with the riggers launches and to let me know she was 'the tall one' at the end of the line of girls pictured on the quayside. Perusal of former catering assistant Ivor Coleman's ring-bound BOAC Brats Newsletters unearthed an unusual photo of the cycling flying boat captain and traffic assistant, while former water controller Peter Davidson explained in detail the alighting area activities and the night sortie of the 'Ploughman'. He also sent me a letter from Stan Gibbs which recalled the radio room equipment installed at the Marine Terminal.

Lilliput resident Jeremy Waters contributed photos of the pre-war club at Salterns from his collection, while Beverley Helliwell Smith unearthed a fascinating framed aerial photo which showed the lower wing tip of the circling biplane. Specialist navigator Vic Pitcher kindly provided his log book and photos of his time aboard the giant Boeing Atlantic flights, supplemented with memories of the Lilliput Marine Terminal by Patricia, the former station assistant who had instantly claimed his heart.

Bob Doe's descent to Poole was related to me in person during our meetings at his West Surrey home during the course of my research for his biography, while the catching of the spy at Lulworth Cove formed part of a fascinating letter from Air Vice Marshal 'Birdie' Bird-Wilson, another survivor of the Battle of Britain, who, having shot down six of the enemy before being himself shot down in flames, had recovered sufficiently to enjoy swimming with equally young WAAFs in a nearby stream after arriving at Warmwell in 1941!

Harry Pusey provided a rare insight to the largely forgotten pre-war presence of Imperial Airways at Poole, among his 'other' experiences, while Bob and Margaret Rayner showed me the original photographs and letters concerning the activities of two generations of the family about the harbour. Mrs Margaret Lee also wrote to me from Bideford in Devon. Agnes and William Fyson sent me a superb snapshot of their trip in a Supermarine Channel flying boat at Bournemouth, while Doctor Nigel Pearce provided another unique pre-war snapshot taken by his father, a ships pilot, of *Maia* and *Mercury* moored off the Vickers factory.

Shorts Publicity Dept kindly sent data and photos, and the Public Record Office of Northern Ireland the *Golden Hind* photo (Bombardier collection). Adrian Meredith sent a reflective shot of *Centaurus*, Philip Glover the cockpit detail of *Hythe* with his father and Joe Parker at the controls, and Dave Fagan a classic image of the Southampton terminal.

Richard Tazwell offered his own research on wartime Poole and arranged a meeting with John Newall to view the photo shoot at Hamworthy, and Keith Hayward and Jim Davis (B.A.Heritage Centre) kindly confirmed events at Poole and Malta – after descending two floors to peruse the relocated archives!

Martin Hayle, who foresaw the need to collate the history of the lesser known Royal Naval Air Stations at Sandbanks and Lawrenny Ferry, kindly sent a copy of his booklet on Daedalus 11, while a morning coffee spent in company of Peter Devlin revealed the initiative of a young naval cadet in wartime Britain. A visit to the home of Ivor and Norma Faulconer, combined memories of naval pilot training and catapult operations with those of the post-war Seaplane Club of Great Britain, together with framed photographs of pre-war pilots and aeroplanes and an unexpected collection of vintage model biplanes. June Topham (née Bamford) topped off her experiences as a young wartime Wren posted out to Africa, with publicity shots of the bevy of 'lovelies' positioned about the Walrus, during a sunny afternoon at her home opposite the former Royal Navy Air Station at Sandbanks.

John Witcombe recounted the activities of 461 (RAAF) Squadron and led me to Sunderland author John Evans who immediately sent the photo of *Mister Blue* at La Baule. Further information came from Christine Campbell of the Imperial War Museum at Duxford, and Nina Burls of the RAF Museum at Hendon, where I had my very first flight as an A.T.C. cadet.

The essential 'Bible' of Sunderland data, Aeromilitaria No 3 1979, was combined with copies of the allocation amendments made at the Belfast factory, kindly forwarded by G-Info, and with the assistance of Richard Gibbons (via Bryan Ribbans' Seawings Flying Boat Forum) and aviation historian Carlos Mey in Argentina (which included the nice shot of *Uruguay*) used to confirm the Sunderland conversions to Sandringhams and their final operators in South America. The RAF Halton Apprentices Association 10th Roll of Honour provided a concise summary of the ditching of 'Sunderland' *Golden Fleece* in remembering 32 year-old RAF Pilot Sergeant Henry Richard Mason of 119 Squadron, while the National Australian Archives include the post-war recollections of former air gunner Leonard Corcoran in remembering Pilot Officer James Barry of 10 Squadron RAAF.

210 Squadron Assocation secretary Martin Balderson kindly assisted my enquiries into the crew of Barry Aikman. He also suggested I contact former Aquila traffic assistant Norman Hull, who answered all my questions and put me in touch with José Carvalho, who forwarded his collection of photos taken at Madeira. The Madeira Museum Story Centre guided me to José, the son of Captain Durval Mergulhäo, who responded with photos of *Porto Santo* while waiting in Florida for the

snows to clear for a return home to Ottawa. Stan Piet of the Maryland Aviation Museum sent the shot of the Mariner (Glenn L. Martin Collection) and Rick Leisenring (Glenn H. Curtiss Museum) typically sent an image of the pilot and his flying boat glider.

Former launch coxswain 'David' Rose provided memories of Poole and Lake Nyasa, while an invite from Kevin Patience to attend a Bournemouth Air Crew Association dinner led to former BOAC stewardess Joan Mills, whose daughter Amanda brought in the Springbok panel during our meeting. Captain Jim Peers effortless related his 'Horseshoe' experiences and the Solent float problem in the absence of surviving log books, while Jean, a former Pan Am stewardess, provided a youthful picture of him taken at Durban.

An illustrated talk for Parkstone Yacht Club members in their delightful 'private residence' just yards from Poole harbour shore, resulted in Boeing 747 Captain Richard Gurney contacting his mother Kathleen, who kindly forwarded a fascinating collection of memorabilia from her Solent flight to Tanganyika. While admiring the view across the Blue Lagoon from the club balcony, I was joined by Bob Kent, whose clear recollection of the German bomber emerging from the night sky was a delight for any writer to chance upon, as were his equally unique memories of the unexpected landing of *Southern Cross* and his meeting with the glamorous Maureen O'Hara.

Margaret O'Shaughnessy took time from her busy schedule to portray the founding of the Foynes Flying Boat Museum and creation of the world's sole Clipper replica, and I have to thank Jennifer Stepp (Stars and Stripes) for permission to use the photo of Charles and Maureen (O'Hara) Blair taken during the 1969 retirement flight for Pan Am, when the actress postponed filming to accompany her husband. Mary Kane of Boeing Images kindly provided the shot of the prototype Clipper by the factory slipway.

Lene Myrdal of the Norwegian National Archives (Riksarkivet) at Oslo unearthed the engineers report of the sinking of *Jutulen* in Africa and Birger Larson of the National Aviation Museum (Norsk Luftfartsmuseum) at Bodø sent details of the last flights of the Vingtor Catalina and the two Norwegian Sandringhams, with photos of *Bamse Brakar* bring craned from the water. Karl Sandberg of the Scandinavian Airline Museum at Gardemoen sanctioned the rare 1939 DNL timetable cover showing a Junkers floatplane in the Lofoten islands, while Marcelo Bordim allowed me to include his photo of Savoia *Jahú* at the Museu TAM (Wings of a Dream Museum) São Carlos, believed the largest museum in the world maintained by a private airline.

I am grateful for all the help given by Virginie Claverie-Lumalé and by Fabrice Bregier of the Musée de l'Hydraviation at Biscarrosse. Virginie also put me in touch with Marc Fabre who kindly sanctioned

the image of his father Henri and *Le Canard*. The museum is also home to des Amis du Musée de l'Hydravion, whose president Jacques Lauray described his colleagues as a benevolent bunch of hydro fanatics!

A chance perusal of the PPRuNe Forum (Professional Pilots Rumour Network) led to an unexpected reply from Bristol, where Melbourne based Captain Henry de Courcier just happened to be visiting his mother-in- law before rejoining the Airbus fleet of Cathay Pacific, and I was pleased to be allowed to use the rare photograph of *Rigel Star* fortunately saved by his mother from her wartime work at Rose Bay.

An email to Booh Crisp resulted in a mass of information from Pierre Jaunet concerning the Catalina Safari operations in Africa, and I have to thank Antoinette for digging out the phone number for Tim Spearman, who allowed use of his atmospheric image of Z-CAT on lake Malawi. Mike Shirley-Beavan also sent details of the Bushbuck Safaris.

Jenn Whiteman contacted me from the New York office of the Christian and Missionary alliance with details of *Gospel Messenger* and its heroic pilot Albert J. Lewis, while former TV reporter Peta Carey recalled the Catalina's crash landing at night while en route to New Zealand. Phillip Treweek sent his airborne view of the Catalina Club of New Zealands XX-T and David Barrie (Rédacteur en chef d'AeroWeb-fr) kindly supplied images of both the Canard replica and the Plane Sailing Catalina at Biscarosse in 2010.

Oakland Aviation Museum's Lori Fogerty and husband and wife team Scott and Pamela Buckingham provided details of the museum and *City of Cardiff*, complemented by Joseph May, who writes for the aviation blog Travel for Aircraft. A phone call to California and Tom Moore (China National Aviation Corporation website), then led to Michael, the grandson of Captain Edward "Eddie" Smith, who kindly sanctioned images of the Douglas Dolphin amphibians.

Executive director Larry Wood and curator Stewart Bailey provided an awesome view of the '*Goose*' in its impressive glass fronted lair at the Evergreen Aviation & Space Museum at McMinnville, Oregon. By contrast, Doctor Andreas Zeitler (flying-wings.com) sent a superb shot of the Dornier 24 piloted by Iren Dornier during a September 2004 photo session over the Bavarian Alps, taken at 11,000 feet from the draughty open doorway of a single-engined Dornier 27.

I have to thank curator Squadron Leader Alan Jones MBE and the staff of Solent Sky for my welcome over the years and to former Sunderland and Boeing 707 captain Vic Hodgkinson who invited me home to view his bound photograph collection after my very first visit, when I was exceptionally allowed into the cockpit of *Southern Cross* (displayed as *Beachcomber*). My repeated thanks also go to Ron and Noreen Gillies for a recorded interview during a very informative evening following the return of the flying boat to Calshot.

Gina Maria Alimberti (New England Air Museum) sent a photo of the restored *Excambian*, latterly operated by Antilles Air Boats, with further information forwarded by director Mike Speciale. Mick Bajcar provided the action shot of an Antilles Goose taxiing across Charlotte Amalies harbour, while Bob Winkworth and Colin Lee (South Hampshire Historic Aviation Society) respectively provided a rare shot of *Corsair* at Hythe and the last airworthy civilian Sunderland leaving Calshot for the Kermit Weeks Fantasy of Flight Museum in Florida. Once owned by Charles Blair, the former *Excalibur V111* is festooned with lights at the end of the runway at Christmas!

Dave Homewood of Wings Over New Zealand Aviation Forum put me in touch with Peter Lewis, whose photo of *Aotearoa* on the waterfront at Mission Bay (credited to Peter and Marcus Bridle) shows what could easily have been done elsewhere. The Mars fire-fighting flying boats are still actively pursuing their craft however and I am grateful to Wayne Coulson (Coulson Aircrane Ltd) for checking my research and to son Britton for forwarding the excellent action shot taken over California in September 2009.

My meetings with Jack and Gemma Harris were always filled with laughter and I had to be prised away from the fabulous collection of aviation memorabillia within the spacious library of their waterside home at Lilliput. The floatplane Spitfire incident over Poole was recounted in detail in a nine page letter to Jack from former test pilot Lieutenant Commander Don Robertson from his Bembridge, Isle of Wight home in 1990. A particularly happy re-union with *Southern Cross* was arranged courtesy of Alan Jones in 2010 when Jack again sat at the controls which he had operated under the guidance of Charles Blair thirty-four years earlier. This time the right hand seat was occupied by Gemma, who even on their honeymoon had had to endure a diversion to see what was going on at the local airfield!

Paul Warren Wilson patiently answered all my emails on keeping a vintage flying boat in the air, while Rachel Morris and the Plane Sailing team kindly allowed me to sit at the controls of '915' as Flying Fortress Sally B watched from the rear of the hangar, perhaps remembering my awe at being allowed inside her own cockpit during an air display at Bournemouth many years ago. Both aircraft are the sole examples flying in this country and rely heavily on contributions from all of us, however modest.

A close friend of Bryan Monkton, Trevor Dean (Australian Aviation Museum) kindly sent the wartime photo of the pilot as a 'Black Cat' RAAF Squadron Leader, and Phil Vabre (The Airways Museum and Civil Aviation Historical Society) sanctioned use of the pre-war view of Rose Bay taken by Milton Kent. Iwona Hetherington (The Powerhouse Museum) provided the image of Captain Taylor, and Ron Cuskelly

(Queensland Air Museum) sent several images of 'Le Bermuda'. Frank Stamford telephoned from a hot and humid Victoria early in 2012 (we were experiencing minus ten degrees) in time to include his photo of *Beachcomber and Islander* at Lord Howe Island in 1974 , while the arrival of Sikorsky replica *Osas Ark* at Duxford, prompted a call to Jacquelyn Borgeson (The Martin and Osa Johnson Safari Museum, Chanute) when director Conrad Froehlich forwarded the image of the pioneer husband and wife wildlife photographers, who had acquired two Sikorsky amphibians and pilot licences for their 1933 Africa safari.

Pippa Leech, and Roger Hopkins (Movie Media), patiently transformed faded seventy year old photos into pristine copies, and I have to thank Olivia Spencer of Loch Lomond Seaplanes for the shot of the Cessna Caravan moored off a Brownsea Island look-alike stretch of Scottish coastline. Now that really would be something to look forward to.

Happy Flying.

Leslie Dawson
Bournemouth
England

© LOCH LOMOND SEAPLANES.

Chapter One

First to Fly

While not forgetting the monks, said to have thrown themselves off church steeples with outspread hands clutching their voluminous robes, as others of their calling simply levitated themselves without any visible means of support, a method yet to achieve its true commercial potential. Nor the pioneering balloon ascents made in France by Joseph-Michel and Jacques-Étienne Montgolfier. Nor the first practical glides made by Otto Lilienthal in Germany using bird-like wings – the true dawn of flight is generally accepted to have cast its light on a cold and virtually deserted beach at Kitty Hawk, North Carolina, in December 1903.

Orville and Wilbur Wright were inventive young men, designing a press to run their own print business and setting up a bicycle repair shop to market their own design. Believed enthralled by the antics of a toy helicopter however and then inspired by Otto and saddened by his death, which had come while seeking a means of controlling flight other than weight-shift, they had built their own experimental bi-plane gliders, using a wind tunnel and inventing the world's first three-axis control system – naturally!

The younger by four years, 35 year old Orville had won the toss of a coin on that windy seventeenth day of December. Lying head-first on the fabric covered lower framework of their *Flyer*, the fuel injected, 12 horsepower engine, built in their own workshop, had propelled him for twelve seconds and 120 feet above the sands of Kill Devil Hills, the safe landing confirming the honesty of the first, man-carrying, sustained flight of a heavier than air machine. Both flew twice that day, Wilbur exciting the few, curious, spectators by remaining airborne for fifty-nine seconds before crunching onto the sand over 850 feet away. The *Flyer* was irrevocably damaged by the wind as it was walked back however and the brothers had returned home to quietly seek protection for their inventions.

On the other side of the world, a shy, reclusive 26 year old young farmer may have beaten them to it by some nine months. Born into a farming and musical family, the son of a Cornishman who had emigrated to South Island, New Zealand, Richard William Pearse had, like the Wrights,

Richard Pearse. New Zealand (and world?) first 'heavier than air flight.
IMAGE COURTESY OF MOTAT LIBRARY.

patented his own (geared) bicycle design in 1902. Like Otto, he had also built a small (15 horsepower) twin cylinder petrol engine and in March 1903, had made his first real flight, as distinct from preceding hops, from a country road near the farmland donated by his parents at Waitohi, South Canterbury, remaining airborne for some 300 yards.

All the more remarkable when considering that the engine, made from tin pots and pans using hand-made tools, was mounted in front and not behind the airframe and had driven a variable pitch, hand-carved metal propeller. The single wing, another innovation, was made of bamboo, scrap metal and canvas, and was fitted with a wire- braced fin on top and a large elevator at the rear. There was also a steerable, tri-cycle undercarriage! The flight may have ended in a gorse bush, but in many ways, was years and not months ahead of the game. Sadly, no firm record survived and it took years for the event to surface. Richard went on to build a helicopter based on a tilting propeller, but quietly died in 1953 without any form of acknowledgement.

His effects included some of his designs however and gradually his prescience began to be recognised, if posthumously. In March 1979 a memorial was unveiled at Waitohi and three years later the local airfield at Timaru was re-named Richard Pearse Airport. Today, visitors to Auckland's Museum of Transport and Technology will find a replica of that inspired early aeroplane and its creator high above their heads – if they care to look up!

From designing and building balloons for wealthy clients such as the

Honourable Charles Rolls, which had required a move from rented premises in London's Tottenham Court Road to two railway arches at Battersea Park, Eustace and Oswald Short had decided to build aeroplanes after Eustace had been taken up for a flight by Wilbur Wright. Elder brother Horace was persuaded to join them and the brothers began testing their machines at Britain's first 'aerodrome' at Shellbeach, near the village of Leysdown on the Isle of Sheppey, where the brothers began building the first of six Short-Wright *Flyers* under license. In 1909 Orville and Wilbur visited the works in London and in Kent where the machines were being built to a higher standard than in France.

Henri Fabre. First successful flight from water. Marseilles March 1910.

Though a lot safer to collapse into, flying from water had not progressed beyond towed gliders and the pioneers had mainly flown from dry land – until the spring of 1910. Born into a ship owning family in Marseilles, Henri Fabre had become fascinated with flight. Having studied advanced sciences at the Marseille Jesuit College and engineering in Paris, he had devoted his time to examining the effects of air-flow on model airframes and wings, but unlike others, had also studied the effects of water on a body. Helped by mechanic Marius Burdin and naval architect Léon Sebille, his first conventional monoplane design failed to leave the surface of the Étang de Berre, a large freshwater 'pool' of water to the north-west of the town, despite three engines driving the propeller! Things improved dramatically when he placed the main wing and engine at the rear, with a pair of small, controlling, biplane wings in front, though the first 'hop' from the lake at the close of 1909 was all too brief due to the limitations of the little Anzani engine.

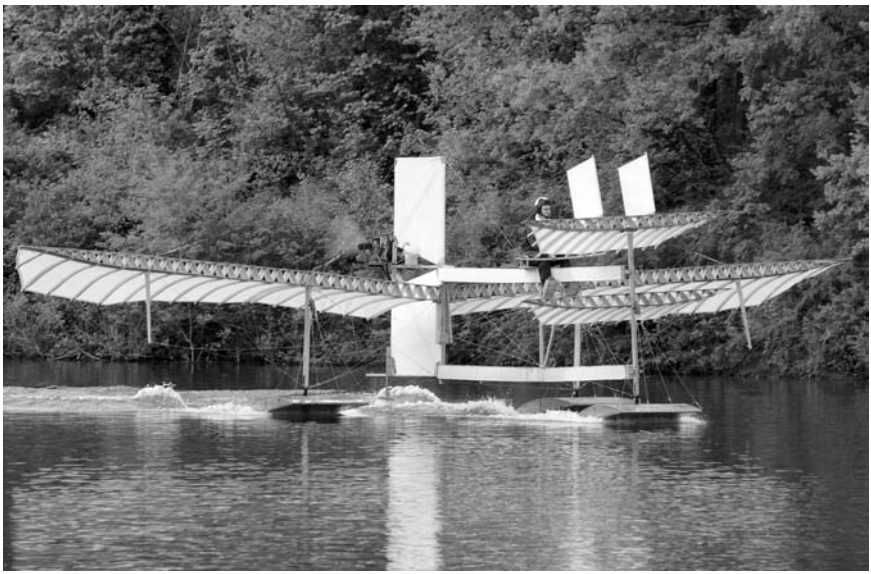
The concept was successful however and three months later an improved design featured a spreading 46 foot, bird-like, dihedral main wing supported by outrigger floats. Positioned behind the rudder, the replacement 50 horsepower Gnome Omega rotary engine was fitted with an 8 foot wooden Chauviere propeller. Twenty-eight feet in front, the top and smaller of two biplane style winglets comprised the elevator,

A Canard at Monaco 1911. Pilot Jean Becu.

controlled by a large wooden lever angled above the skeletal airframe. The 'cockpit' was an exposed open weave 'basket' fitted mid-way along the top of two parallel wooden beams, braced by a vertical strut.

On 28 March 1910, the moustached 27 year old engineer climbed aboard his fragile looking creation and was rowed out to the centre of the lake. A large crowd had gathered on the shore and on seeing the rear mounted propeller, probably expected him to fly in that direction, or more likely crash, for he had never taken a flying lesson in his life. After a few, short, test runs, the sound of the engine echoed across the water and the 'clothes-horse' left the surface at the very first attempt, maintaining some 6 feet of daylight before safely set down, intact. Three more flights were made, the longest covering some 600 meters (1,600 feet), all of which was formally recorded by a court official from nearby Martigues.

Henri named his craft, the first to leave water under its own power, *Le Canard* (the duck) after the bird it resembled in flight, and was subsequently seen making much longer flights across the lake. A few examples were built and sold, while several of the patented hollow, aerodynamic floats, were snapped up by the pioneering Gabriel and Charles Voisin, whose conventional biplane design became the first to fly over the Seine that October. Fitted with floats and wheels, the modified Canard-Voisin became the first successful amphibious 'hydro-avion' and an example was delivered to the world's first 'seaplane' carrier *La Foudre*. Along with Richard Pearse, the achievement of Henri Fabre, the first to prove it was



Le Canard replica Lake Biscarrosse May 2010. © David Barrie.

possible to fly from water, has almost faded into obscurity, but on the one hundredth anniversary of his historic flight, a full-size replica faithfully constructed from wood and fabric by Airbus engineers Guillaume Bulin and Marc Anscieau was displayed at the May 2010 Biscarosse Seaplane Air Show.His meeting with a prominent American pioneer undoubtedly helped solve problems on the other side of the Atlantic.

Born at Hammondsport New York, Glenn Hammond Curtiss had also set up a bicycle repair business but had gone on to race 'motor cycles' at world record speeds powered by his own engines, before attracted to flight. Invited to join the Aerial Experiment Association led by Alexander Graham Bell, the inventor of the telephone, on 4 July 1908 his *June Bug* design remained airborne before an appreciative crowd for a measured kilometre, earning him the Aero Club of America pilots licence Number One. Displays and long distance flights followed, while finding time to teach one of the earliest women pilots Blanche Stuart Scott. A Curtiss biplane made the first take off and landing aboard a moored American battleship and his 1911 wheel and float equipped *Triad* (land, air and water) amphibian, was sold to the naval arms of America, Japan, Germany and Russia. Though meeting Fabre, the first to use lift-producing floats, he had not consulted the Wright brothers, who bitterly contested his copying of their patented airframes!

Glenn's particular contribution was in designing boat-like hulls to support the weight, with floats used purely to balance the wings. The

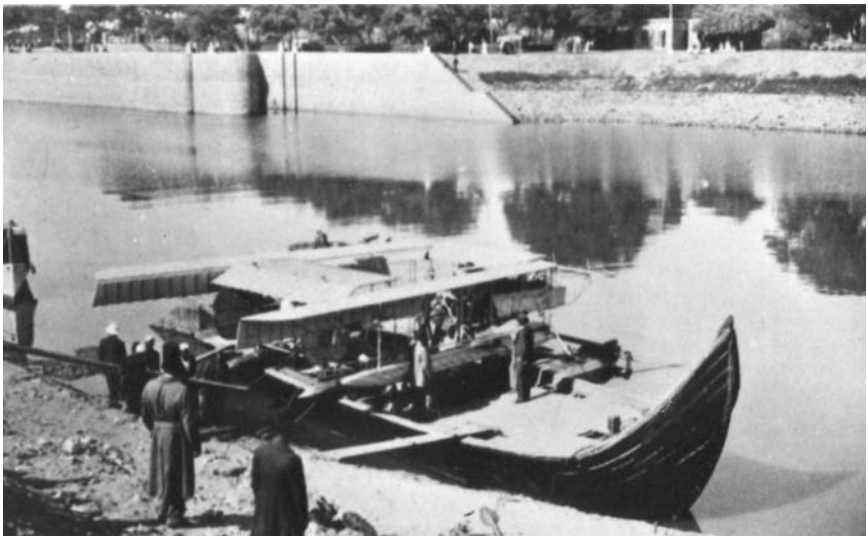
provision of a 'step' was found to aerate the area in contact with the water and reduced the drag even further as the hull rose from the surface, as was demonstrated in 1912. The following year the Smithsonian Institute awarded the 35 year old the Langley Medal for his development of the 'flying boat' and Lord Northcliffe, owner of the *Daily Mail* newspaper, offered ten thousand pounds for the first heavier than air crossing of the Atlantic. Four years earlier, Frenchman Louis Blériot had won an identical sum from the newspaper for crossing the English Channel, but an Irishman would fly the Curtiss entry.

Tall, and with striking, aquiline, features, John Cyril Porte had commanded the earliest of Royal Navy submarines and was an excellent navigator, though the long hours spent on the exposed metal casings undoubtedly caused the onset of pulmonary tuberculosis. Flying interested him and with other officers he had launched an experimental glider from the slopes of Portsdown Hill near Portsmouth before flying a home-built aeroplane similar to the attractive little *Demoiselle* monoplane of Alberto Santos-Dumont, though his illness had caused the Admiralty to retire him in 1911.

Undaunted, he had gained his pilot's licence at Rheims in France and invested his money and services in the newly formed British Deperdussin Company. As technical director and test pilot, he won a host of trophies promoting the company's monoplane while privately flying a little floatplane called '*The Seagull*'. Unable to attract sufficient support however, the company had folded and he was fortunate to be taken on as a test pilot by White and Thompson, another new concern. A meeting with Glenn Curtiss at the Volks seaplane base at Brighton had resulted in a flight in the Curtiss flying boat shipped over for Ernest Bass of the famous brewing company. His new employers would maintain it, giving Porte an invaluable insight into the Curtiss hull design, though it would fall to another to make the worlds first scheduled passenger flight.

Like Curtiss, Tom Benoist had progressed from flying aeroplanes to building them and on 1 January 1914, his graceful (Type 14) single engined biplane flying boat, flew Abram Pheil, a former mayor of Saint Petersburg, who had bid four hundred dollars for the privilege, alongside pilot Tony Jannus for the 23 mile open-cockpit, over-water, inaugural flight of the Air Boat Line to Tampa, Florida. Financed by millionaire Rodman Wanamaker, Curtiss had designed a much larger flying boat to cross the Atlantic to Plymouth. The start of the First World War postponed the competition, but by the end of five years of war in Europe, the aeroplane had been developed as an important weapon, with floatplanes and flying boats serving the naval arms of the principal combatants and their allies.

Moving to a more suitable flying ground at Eastchurch and having



Frank McClean and Short S80 folding wing 'pusher' Hydro-Aeroplane on Nile Jan-March 1914.

studied the rapid advance of French designer aviators such as Henri and Maurice Farman, the Short brothers had completed their first biplane for the Naval Wing of the Royal Flying Corps. In January 1912, Lieutenant Charles Samson had become the first British pilot to fly from a ship after taking the Short S38 from a wooden ramp fitted across the deck of HMS Africa, though it seems the event had been quietly pre-empted at Sheerness harbour in December. The ramp was re-fitted over the gun turret of the battleship HMS Hibernia in time for the May Naval Review off Portland, when Samson became the first to fly from a moving vessel. For each of the (three) flights the machine had been fitted with long streamlined 'flotation bags' adjacent to both wheels and the tail-skid, effectively making it an amphibian. A year later the company's Folding

Wing device revolutionised the storage of aircraft, especially on naval vessels, the subsequent rise in orders bringing yet another move to premises alongside the river Medway at Rochester. In 1914 Frank McClean even flew a Short 'Hydro-Aeroplane' in stages from Alexandria to Khartoum.

The war had increased floatplane production for the Seaplane Works, while over a hundred non-rigid SS (Submarine Scout) airships were built for the Airship Service and two rigid airships (R31 and 32) for the Admiralty. With so many new aircraft to be flight tested, John Lankester Parker was taken on as an assistant to John Kemp, though his youthful appearance caused Horace to famously suggest he refrain from flying the larger ones! John Parker would become company chief test pilot and would retire as a director, awarded the OBE for his services to aviation. The Rochester built biplanes were the first to deliver torpedo attacks on shipping, but in 1917 forty-five year old Horace died after an illness. By then, the problems of using water absorbing wood, unreliable glues and flammable materials were all too apparent.

Re-called by the Royal Navy, Lieutenant Commander Porte had joined the newly formed Royal Naval Air Service as squadron commander of a pilot training school at Hendon, North London, where he had given many displays. He had persuaded their Lords of the Admiralty to buy the *America* flying boat and the reserve for the Atlantic attempt and was largely responsible for the 1915 order of Curtiss H4 flying boats, following trials with the first British flying boat at Calshot and by the German Navy! Built by the Cowes, Isle of Wight, boat building company of Samuel Saunders, the hull of the Sopwith Bat Boat featured Samuels patented method of sewing strips of laminated mahogany and water-proofing calico with copper wire, named Consuta after the steam launch which had tested the idea on the Thames in 1898. The little flying boat had won the 1913 five hundred pound Mortimer Singer prize for the first 'All-British' amphibian, despite the wheels having to be kicked into place by the observer in the second seat, and though seen with bomb racks at the 1914 Naval Review, the trials had ended early the following year, when the navy dismantled their example.

Having led mixed formations of floatplanes and flying boats against German submarines and airship bases, John Porte was given command of the RNAS Seaplane Experimental Establishment at Felixstowe, where the Curtiss flying boats had been evaluated. From simply improving the American flying boat he proceeded to develop a completely new British-built flying boat, the Felixstowe, using his own hull design powered by Rolls Royce Eagle engines. The German 'ace' Manfred von Richthofen would forever be associated with the bright coloured machines of his Jasta, high over the misery of the mud-filled trenches. But few would remember the coloured stripes and zigzag painted hulls of some of the

Licence-built Short Felixstowe, former military F3.

RNAS Felixstowes towards the end of the war: the 'Dazzle' effect created by the marine artist Norman Wilkinson to distort the outline and direction of merchant ships to German submarines.

The guns ceased firing in November 1918. The following May just one of a trio of three-engined 'Navy-Curtiss' flying boats alighted at Plymouth having become the first fixed-wing craft to cross the Atlantic, though the route owed much to Porte's ideas by stopping at Newfoundland, the Azores and Lisbon. But at twenty minutes to ten on the Sunday morning of 15 June, a modified twin-engined Vickers Vimy bomber landed in Ireland after flying non-stop from Newfoundland in less than sixteen hours. Former Royal Flying Corps pilot Captain John William (Jack) Alcock and former observer Lieutenant Arthur Brown duly received the ten thousand pound *Daily Mail* prize and were knighted by King George V, while the contents of the sealed white bag that had also survived the traumatic flight was acknowledged as the first air mail to be carried over the Atlantic.

A Porte flying boat may well have conquered the ocean, but in August, just one day away from departing for South Africa, the huge five-engined *Felixstowe Fury* triplane stalled and crashed after being lifted too soon from the water. The Felixstowe 5 would replace all other flying boats operated by the newly formed Royal Air Force however, with fifteen

bought by the Imperial Japanese Naval Air Service and two operated between Key West and Havana by Aeromarine West Indies Airways.

Years would pass before a flying boat conquered the ocean. But in September the resumption of the Schneider Trophy Race at Bournemouth saw the floatplanes joined by the Sea Lion flying boat, designed by 24 year old Reginald Joseph Mitchell of the Southampton based Supermarine Company, and the 'winning' Savoia S13 flying boat entered by Italy, later disqualified for completing the wrong course in the mist!

Retired as a wing commander and made a companion of the distinguished order of Saint Michael and Saint George (CMG), John Porte became chief designer for the Gosport Aviation Company, having sensibly patented his ideas for improving floats and hulls. His illness had never left him however and he died suddenly in October, leaving his wife Betty and the world of aviation to mourn the loss of Britain's greatest flying boat pioneer. Just 35 years old, he was posthumously awarded the American Distinguished Conduct Medal by President Woodrow Wilson.

SHORT BROTHERS

The post-war shortage of timber and the need to diversify in order to survive, caused the brothers Short to manufacture metal bus and tram bodies for London Transport, though the use of duralumin in airship construction and the research into metal hull and float designs by Oscar Gnosspelius and Arthur Gouge would later prove invaluable. Having built Felixstowe flying boats for the RAF and Japanese Navy, in 1921 Shorts first large flying boat design, the Cromarty, built in response to the Admiralty's requirement for a long range military flying boat, was fitted with a pair of Rolls Royce 650 horsepower Condor engines believed capable of keeping the five and a half tons in the air for up to eleven hours. Prophetically, the name began with a C, but the hull was still of water absorbing wood (spruce) and a fatal taxi across a reef in the Scilly Isles in August 1922, by the RAF Seaplane Development Flight, saw the fifty-nine foot long biplane scrapped on the spot.

The previous year the company had produced the first British all-metal (duralumin) aeroplane, and though government cut-backs precluded the Silver Streak fighter from achieving the prominence it deserved, in 1923 the company completed a single seat flying boat for a private buyer. Just under 25 feet long with a 36 foot wingspan, it was thought to be the world's smallest flying boat, but more importantly was the first to be built at Rochester with an all metal hull. Grossly underpowered by the pair of 16 horsepower motor cycle engines however, the S1 Cockle failed to leave the water until the wing setting was adjusted, by which time the buyer had lost interest. Passed to Felixstowe for evaluation, the engines were later replaced by a pair supplying three times the supposed 'power de

cheval'. But nothing came of it and the Cockle was eventually scrapped, though subsequent flying boats would continue the distinctive smooth profiling. Flown at the beginning of 1925, the experimental Felixstowe S2 was the first Short-built 'large' flying boat to feature an all-metal hull. By then, the government had disbanded all four of the heavily subsidised independent airlines in favour of a single state-controlled concern.

Aside from Daimler Airway and the British Marine Air Navigation Company, Handley Page Transport had been the first to provide lunch boxes filled with sandwiches, chocolate and fruit for passengers boarding their converted bombers, while Instone Airway had been first to introduce formal attire for its staff. Funded equally by the government and the British, Foreign and Colonial Corporation, Imperial Airways was formed on 1 April 1924. Granted a capital sum of one million pounds with a further million pound subsidy to be spread over the next ten years, the 'all-British' personnel and thirteen aircraft were expected to provide regular flying services to the British Empire and its Dominions. Not all the collection were landplanes however.

Supermarine

The son of a Birmingham iron founder, Noel Pemberton-Billing had run away to South Africa and had subsequently been wounded in the Boer War. Returning to England he had opened one of the first motor-car garages at Kingston-on-Thames and had qualified as a barrister before opening his own steam-yacht brokerage, when he took on a young Hubert Scott-Paine as his assistant. Believed to have won a bet by qualifying as a pilot within a single day, in 1913 Noel is thought to have used the money to open the riverside factory of Pemberton-Billing Ltd at Woolston, near Southampton, to build his own aeroplanes and flying boats. Interested in flying and fast boats, Hubert was made works manager and when Noel was called up for the Royal Naval Air Service (when he constantly campaigned for an air arm independent of the army and navy), Hubert bought and renamed the business as the Supermarine Aviation Works Ltd.

Designed by Lieutenant Linton Chorley Hope RNVR, who had created strong, lightweight, yacht hulls before being called up, AD flying boats were built for the Admiralty towards the end of the war, the end of hostilities enabling several to be bought back and modified to seat up to three passengers in front of the pilot. Known as Channel flying boats, they were used to deliver newspapers and to give pleasure flights from Southampton, Bournemouth and the Isle of Wight. In April 1920, three were delivered to Southampton railway station to be shipped out to Bermuda for pleasure flying with the Bermuda and West Atlantic Aviation Company. Three more went to Det Norske Luftfartsrederi A/S,

Channel flying boat off Bournemouth 1919.

which opened Norway's first airline service, and four were bought by the Royal Norwegian Navy, which opened the country's first airmail service. Others went to Japan, New Zealand, Venezuela and Chile.

Hubert had then joined with Southern Railways, the owners of Southampton Docks, in forming the British Marine Air Navigation Company. The following June the first of three new commercial flying boats was launched from the east shore of the river Itchen. Designed by Mitchell, now chief company engineer and designer, the Supermarine Sea Eagle continued the 'pusher' engine format, the 360 horsepower Rolls Royce Eagle engine supporting up to six passengers, sat within an enclosed cabin, at just over 90 miles an hour. The boat-like hull was fitted with fixed wheels to enable it to power ashore unaided, but if needed to be moored the pilot had to leave his open cockpit and carefully make his way across the cambered surface to the bow, using the handrail fitted beneath the windows of the passenger cabin. If no buoy was available, he had to unship the coiled rope and sea-anchor lashed to the hull above the starboard wheel strut. A flight to Guernsey on 25 September 1923 was recognized as the first scheduled passenger service of a British flying boat (technically an amphibian) and though services continued to the Channel Islands, Cherbourg and Le Havre, Hubert sold his interest in Supermarine Aviation to pursue his passion for power boats, but accepted a directorship when Imperial Airways took over in April 1924.

Launched that March in response to the Air Ministry's intention to replace the Felixstowe 5s, the Mitchell designed Swan featured a wheel retraction system driven by a fan exposed to the slipstream. Emerging a year later, the production Southampton, became the second longest-serving flying boat in RAF history. Fitted with ten seats in 1926, the Swan was used by Imperial on cross-channel services for just a year before retiring. Of the three Sea Eagles, G-EBFK had crashed in May 1924, GR

British Marine Air Navigation Company Supermarine Sea Eagle.
Courtesy Roy Tassell collection.

was hit by a ship while moored at night in Saint Peter Port in January 1927, leaving GS to continue the Guernsey service until late 1928, the year the company was absorbed and re-named as the Supermarine Aviation Works (Vickers) Limited.

Vickers had produced its own amphibious flying boat at the close of 1918, though Sir John Alcock had encountered fog en route to the 1919 Paris Exhibition and both he and Viking 1 had perished during the forced landing at Côte d'Evrard in Normandy. A year later, Viking 3 had secured first prize in the Air Ministry trials for amphibians and a pair of Viking 4s were briefly operated on passenger services between Buenos Aires and Montevideo by the Rio Platense Aviation Company until the cash ran out. Within a few years Supermarine and R.J Mitchell would find lasting fame for producing a legendary fighter for the RAF, while Short Brothers would forever be associated with the British flying boat story.

Surveys

Having risen from a veterinary assistant to a commissioned RAF flying instructor in the final year of the Great War, thanks to the bridge party contacts of his mother at their Camberwell home, Alan (John) Cobham had joined with two other former service pilots in giving seasonal 'joy-rides' using a converted Avro 504 trainer and had met his future wife,

Pastoral picnic. Alan and Gladys Cobham(later Sir and Lady Cobham). COURTESY MICHAEL COBHAM, FLIGHT REFUELLING LTD.

actress Gladys Lloyd, while operating from Yorkshire. The demise of the Aircraft Manufacturing Company, which he had joined to pilot an aerial photographer, then caused him to join his friend Captain Geoffrey de Havilland as a test and charter pilot.

In 1923 he was awarded the Royal Aero Club's Britannia Trophy for crossing the English Channel in a light aeroplane, though the 26 horse-power engine of the tiny, single seat *Humming Bird* was left with just half a gallon of fuel in the tank. Having prudently acquired large refuelling funnels and pumps, he had then won the 1924 Kings Cup Air Race with the new DH 50 biplane. Aware that Sir Sefton Branckner, the newly appointed director of civil aviation, intended sailing to India to assess possible landing sites for an Australian service, he took the opportunity to fly him there in the enclosed cabin of the biplane, though the cockpit still lay open to the elements. The first to fly over the Himalayas, they were welcomed as heroes on their return in February 1925.

South Africa was a particular goal of the airlines however and having again fought hard to attract sponsors for a survey, in particular Sir Charles Wakefield of Castrol Oil, a year later the pilot flew out to Capetown via India and Rangoon, accompanied by his faithful engineer Arthur Elliott and by Gaumont British Films cameraman Basil Emmott. Intent on filming, they were lucky to clear a momentarily forgotten ridge, while the pilot's instinctive reactions saved them from disaster when moisture flooded the carburetor while circling 1,000 feet above Victoria Falls. Having sat alone at the controls for a total of over ninety hours and some 16,000 miles, he brought them home in March, beating by a full two days the simultaneous return to Southampton from Capetown by the Union Castle liner Windsor Castle. Other flyers provided an airborne escort to Croydon Airport and Gladys was taken aloft in a two seater

Moth to watch her husband's arrival, when his aeroplane was engulfed by an adoring British public. Film and book credits followed.

Three months later he was off again on an equally eventful 28,000 mile survey to Australia, receiving a knighthood and a second Britannia Trophy in October, when the float-equipped DH 50 was skillfully landed, as requested, on the Thames between the crowd-packed bridges at Vauxhall and Westminster, though without Arthur Elliott. The weight of the metal floats had allowed just one other aboard and faced by fierce dust storms after leaving Baghdad, they had been forced to skim the Tigris, unwittingly disturbing the aim of a gazelle- hunting Arab who had fired a single shot at them instead. An emergency landing was made at Basra. But the bullet had entered Arthur's lung and the pilot had needed a lot of persuasion to continue after the death of his friend, though greeted by one hundred thousand admirers at Melbourne.

In 1927 four Southampton flying boats of the RAF Far East Flight left to survey the route to Australia via Italy, North Africa, India and Malaya, the all metal hulls reducing the all up weight by five hundred pounds with a corresponding increase in range. After circumnavigating Australia, the crews crossed the South China Sea to Hong Kong before returning to Singapore where they were reformed as No 205 Squadron. Sir Alan had also left Britain that November.

Having co-founded Cobham-Blackburn Airlines as a prelude to operating regular flying boat services between Alexandria and Capetown, he convinced the Air Ministry to loan him the experimental (1926 built) all-metal Short Singapore flying boat for the 'Sir Charles Wakefield Flight of Survey Round Africa'. Lady Gladys had joined the crew as an airborne secretary to allow her husband to attend the many conferences with government officials, for their co-operation and financial support was vital to the success of future services. The route was planned to cross the Mediterranean and make a clockwise circuit of Africa, from the Nile to the Indian Ocean and to Capetown, returning along the Atlantic seaboard to Gibraltar. A truly remarkable survey followed, for many areas were uncharted and had never heard the sound of aircraft engines, let alone seen a flying boat.

After flying an exhausting 20,000 miles across Egypt, the Sudan, South Africa and Southern Rhodesia, and a 2,000 mile survey between Lake Victoria and Khartoum for the Colonial Office, which was considering an air mail service, Sir Alan brought them home on the last day of May 1928, but immediately embarked on a publicity tour of the major ports of Great Britain. The government would always favour the state airline however and in December, Imperial Airways bought out the Cobham-Blackburn company to secure the rights to operate services in South Africa.

In the summer, *City of Alexandria*, the first of five metal-hulled Calcutta flying boats evolved from the Singapore design, began flying between

Calcutta *City of Alexandria.*

Southampton and Guernsey. The rest would be named after the city of Athens, Rome, Khartoum and Salonika. Accompanied by Oswald Short, on 1 August John Parker brought the sound of the three, 550 horsepower Bristol Jupiter engines to the Thames, landing between the Vauxhall and Lambeth bridges before mooring off the Albert Embankment to allow Chancellor of the Exchequer Winston Churchill and other dignitaries of the Houses of Parliament to tour the aircraft. The following year Calcuttas began linking Genoa with Alexandria for the London to India airmail and passenger service.

Flown from Croydon to Basle by a three-engined Armstrong Whitworth Argosy airliner, passengers boarded a train for Genoa where the fifteen seat flying boat awaited them. Unlike the two pilots, they (and the radio operator) were sat within an enclosed cabin where drinks and light meals were served by a steward while crossing the sunny Mediterranean to Naples, Corfu, Phaleron Bay (west of Athens) and Spinalonga Bay (off north east Crete); the final landing made in Ras-el-Tin harbour at Alexandria. A second train journey ended at Cairo from where eight-seat de Havilland Hercules airliners completed the seven-day service at Karachi. An early casualty to the fleet came in October 1929 when *City of Rome* was forced to descend to the sea when some 10 miles off Spezia, north-west Italy. Discovered by chance by a merchant vessel late that night, the transfer of passengers proved impossible in the high seas and gale force winds. Though taken in tow, the line soon parted and all seven occupants were never seen again.

Keen to start a Cairo to Capetown service, Imperial Airways needed to see how a floatplane would tackle the natural lakes and rivers of Africa. Approached by the Air Ministry while building an all-metal and sound-proofed, seventeen seat, single-engined passenger aircraft, complete with washing and toilet facilities, Shorts added two more engines and a pair of 40 foot floats to give a fair comparison with a Calcutta. Alan Cobham was the natural choice of pilot. Manned by three crew and two (movie and still) photographers, between July and August 1931, the Valetta was flown across Africa to Lake Kivu (west of Lake Victoria) and into the

Congo, returning to Rochester after a survey of over 12,000 miles. Floatplanes would never seriously compete with commercial flying boat services, but in September, Reginald Mitchell watched Flight Lieutenant John Boothman of the RAF High Speed Flight, fly the S6B at over 340 miles an hour above Cowes to win Britain's third Schneider Trophy Race. Two weeks later, the Rolls Royce R engine powered Flight Lieutenant George Stainforth to over 407 miles an hour, a world record.

Mitchell's Sea Lion flying boat had prevented Italy winning the trophy outright in 1922 and the following year his S4 had raised the world speed record for floatplanes to 226 miles an hour. With America needing just one more win to secure the trophy after the 1925 race, the far-sighted Air Chief Marshal Trenchard had provided Air Ministry funds to form an RAF team, the High Speed Flight, at Felixstowe. Supermarine S5s had come first and second in 1927 and despite opposition from treasury officials, Air Ministry funds had again been used to purchase two Supermarine S6s, enabling the 1929 race to be won at almost 330 miles an hour. The state of the economy had deterred the government from sponsoring the all important third race however and the victory owed everything to the patriotic gift of one hundred thousand pounds from Lady Lucy Houston. Without her, the lovely sculpture would not be permanently installed within the Royal Aero Club in London and Mitchell's legendary Spitfire design, born from these triumphs of speed, may never have materialized. A year later the world's largest flying boat began a protracted tour of Europe.

Dornier

Born to a French wine importer and his German wife at Kempten (Bavaria), Claudius Dornier had graduated from the Technical University at Munich. When in his late twenties, his working knowledge of strengthening light metals had seen him appointed personal adviser to Count Ferdinand von Zeppelin, whose airship works were at Friedrichshafen on the Bodensee, the German name for the 39 mile long freshwater Lake Constance, bordered by Germany, Austria and Switzerland. Given his own department to develop all-metal aircraft, by the end of the First World War his use of thin, load bearing panels in the construction of the wings and hulls had transformed the designs. Moving to Manzel, the department became his own, independent Dornier-Metallbautten, which in 1922 moved to larger premises at Altenrhein on the Swiss shore of the lake, to avoid the ban on building military aircraft imposed on Germany and her allies. He also opened a factory at the Marina di Pisa, on the west coast of Italy, where his delightfully streamlined Wal (whale) flying boat flew at the end of the year.

Powered by two Rolls Royce Eagle engines fitted in tandem to reduce the frontal area and maintain equilibrium should one fail, the hull accommodated fourteen passengers and featured aerodynamic stub-wings (sponsons) rather than wing floats. The tail had a single fin and rudder. Built under license in Spain, the Netherlands, Switzerland, Japan, America and Russia, the reliable flying boats were snapped up by airlines and the military. The 1925 expedition of the renowned explorer Roald Amundsen landed a pair on the most northern Arctic ice and in January 1926 one of sixteen operated by the Spanish Air Force made an east-west crossing of the South Atlantic to Buenos Aires, though with several intermediate stops. Pilot Ramón Franco became a national hero. Two years later, the hydrogen-filled airship Graf Zeppelin began a seasonal trans-Atlantic service to New York, but in July 1929 a much larger flying boat, specifically designed to cross the Atlantic non-stop, emerged from the factory at Altenrhein.

Known simply as the Do-X, with the appropriate registration D1929 boldly stenciled across the wing and fuselage, the twelve (tandem) Bristol Jupiter air-cooled engines built by Siemens, lifted some 40 tons from the lake to become the world's largest heavier than air flying machine. In October, almost a hundred and sixty passengers were flown for an hour over the lake. The following year the four year-old state airline Deutsche Luft Hansa began operating three Wals on a South Atlantic airmail service, with ships positioned off West Africa and South America to winch them up for refuelling and maintenance before catapulting them on their way. Having made three hundred test flights, and refitted with Curtiss water-cooled engines, in November 1930 the Do-X began a lengthy tour of Europe and West Africa and the following August completed a thirteen hour crossing of the South Atlantic to New York. Calshot was visited during the outward flight and during the return in May 1932, after which the colossus was landed on Lake Müggelsea in the eastern suburbs of Berlin. Underpowered and uneconomical, the giant never conquered the Atlantic and lasted less than a year with the renamed Lufthansa.

From October 1931 Calcuttas had begun flying from Cairo to Mwanza on Lake Victoria and in January, Imperial had begun a ten and a half-day, weekly through-service to South Africa, though the Capetown sector was retained by South African Airways. The design evolved into the military Rangoon flying boat which re-equipped 203 Squadron at Basra in the Persian Gulf during the year, the last of them fitted with stainless steel Alclad planing bottoms to lessen the corrosion. The year also saw the introduction of the Short Kent flying boats *Scipio*, *Sylvanus* and *Satyrus*. Born of the political decision by Italy to stop British flying boats refuelling in the ports of its colonies, the 450 mile range enabled them to fly non-stop from Mirabella (Crete) to Alexandria.

* * *

The Kent class introduced a luxurious form of travel soon to be associated with flying boats. The enclosed cockpit had a separate compartment at the rear for the radio operator/navigator, while an increase of over nine thousand pounds all-up weight enabled a higher mail payload to be carried. The fitting of four engines proved more reliable, the long exhaust pipes and collector rings reduced the noise for everyone aboard, while the wide cabin allowed much more space for the fifteen passengers. Unlike the Calcutta's forward-facing seats, arranged in a double and single row either side of a narrow walkway, the Kent had four rows of facing pairs on both sides of an aisle which led aft to the stewards 'pantry', toilet and washroom. As a measure of the times, the twin-burner oil stove could be used by a ladies 'travelling companion' to serve her mistress her usual fare. The same applied to a gentleman travelling with his own servant or valet.

In May 1932 Eustace Short died of a heart attack while landing the single engined, all-metal Mussel floatplane on which he had first learnt to fly. Oswald was left to carry the family name forward and in June the prototype all-metal Sarafand flying boat, emerged as the second largest aeroplane in the world. Though still a biplane, the 31 tons were lifted by six Rolls Royce Buzzard engines in tandem (as was the cockpit seating), the lower of the 120 foot wings strengthened against the drag of bracing hull/wing struts. Designed for ten crew, with a range of over 1,250 nautical miles, the flying boat proved more efficient than the Do-X , with half the engines and typically none of the publicity.

The RAF could only use it for experimental work, but the concept of a large and reliable, multi-engine flying boat, had been proven. Just over a year later, the company's first large monoplane flying boat, the twin-engined Knuckleduster, was launched in response to an Air Ministry requirement for a general reconnaissance flying boat, the distinctive thirty degree gull-wing necessary to clear the propellers of the steam-cooled Rolls Royce Goshawk engines from the water. Alliot Verdon Roe, founder of the A.V. Roe (Avro) aircraft company, and his brother Humphrey, had joined Samuel Saunders on the Isle of Wight and both Saunders-Roe and Supermarine received contracts for their military (London and Stranraer) biplane flying boats. The revolutionary Knuckleduster never progressed beyond the prototype, but Shorts continued development of the monoplane would soon bear fruit.

Long- distance

Aside from contesting the Schneider Trophy, Italy had investigated the practicalities of long-distance flying. In 1925, the year the race was held at