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VVS-2 Unity with White Knight II, "Eve". [Virgin Galactic]

The New Space Race Private Enterprise and Space Tourism

By Joe Martin

Will the summer of 2021 be remembered as the dawn of commercial space travel, or will a few minutes spent at the fringes of space by a couple of billionaires and a handful of their friends rate little more than an exotic but insignificant footnote in aerospace history?

Whatever the case, the record will show that the first heat of the new space

race was won by Virgin Galactic, one of several enterprises under Sir Richard Branson's entrepreneurial tent. On July 11, 2021, the White Knight II (N348MS) mother ship, christened "Eve" in honor of Branson's mother, hauled the rocket-powered Unity, officially a Scaled Composites Model 339 registered as N202VG, to 46,000 ft. After release and motor ignition, Unity zoomed to 86 km (282,000 ft.). At the top of the ballistic arc, Branson and his three passengers experienced a moment of weightlessness before beginning a gradual re-entry. The flight terminated in a conventional runway landing at New Mexico's Spaceport America.

Ten days later, Blue Origin founder and former Amazon CEO Jeff Bezos and three others rocketed aloft sealed in a capsule atop a liquid fuel booster, the combined system named New Shepard (NS) in honor of astronaut Alan Shepard, who in 1961 made America's

first suborbital flight in the Mercury capsule named Freedom 7. After booster separation and reaching an apogee of 107 km (315,000 ft) the Bezos group also enjoyed a few weightless minutes before reentering the atmosphere and floating gently back to earth beneath three parachute canopies. The booster, or Propulsion Module as it's termed, autopiloted itself to a stand-up landing on the West Texas launch pad.

Getting There

The journey to space proved to be much harder and longer than either Virgin Galactic or Blue Origin anticipated, largely due to the stated goal of making space travel easier and more affordable, which in turn meant producing systems that could be quickly and (relatively) cheaply refurbished and flown again. Both teams employ refined versions of technologies that first emerged decades ago but with some important differences,

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New Shepard 16 blasts off with Blue Origin's first space travelers aboard Credit: Blue Origin



White Knight and SpaceShipTwo Unity in front of Spaceport America Credit: Virgin Galactic



Workers surround SpaceShipOne, the Bell X-1, Lindbergh's the Spirit of St. Louis, and the Apollo 11 command module as the new Milestones of Flight gallery is constructed Credit: Smithsonian/NASM

the first being that both enterprises were funded from private, non-government sources.

Jeff Bezos started Blue Origin in 2000, electing to follow the path blazed by NASA and the Soviet Union in the 1960s. The company motto, *Gradatim Ferociter*—Latin for “Step by step ferociously” — is a fitting description of the methodology Blue Origin has practiced from day one. Particularly in the early days, Bezos held his cards close to the vest. Almost five years elapsed before the company’s first test vehicle, a precursor of the current autonomous landing system, made a short flight, and even that event was not revealed until some days later.

Branson and Virgin Galactic came on the space tourism scene in 2004, just before Scaled Composites’ SpaceShipOne clinched the \$10 million Ansari X Prize for successfully demonstrating a reusable space vehicle. The mother ship concept employed by Scaled Composites and now Virgin Galactic dates to the “higher and faster” era of modified B-29s and their X-plane payloads in the late 1940s-early 1950s. The notion of utilizing the same method as a steppingstone to space was pioneered by NASA and its B-52 (52-0008) that first carried the X-15 aloft, followed some years later by the air-launch-to-orbit of satellites deployed by Orbital Sciences’ Pegasus rockets. Orbital (now part of Northrop Grumman) subsequently outfitted its own mother ship, a Lockheed L-1011 (N140SC) nicknamed “Stargazer” that remains operational today — the only L-1011 still flying.

Designed by Burt Rutan’s staff and backed by the late Paul Allen, SpaceShipOne was already in the record books, becoming the first privately built aircraft to exceed the speed of sound on the 100th anniversary of the Wright Brothers’ 1903 flights at Kitty Hawk. Retired after 17 glide and powered flights, four of them into space, SpaceShipOne (Scaled Composites model 316, N328KF) now occupies a place of honor in the National Air and Space Museum.

In the meantime, Jeff Bezos was buying up ranchland around Van Horn, Texas, eventually accumulating 165,000 acres. In November 2006, Blue Origin launched and landed its Goddard test vehicle at the Corn Ranch facility, the first step towards development of a reusable booster. Out in Mojave, California, Virgin Galactic was moving forward as well, although scaling up SpaceShipOne to a multi-passenger configuration and problems with the rocket fuel presented significant hurdles. The 2007 explosion of a tank of nitrous oxide at the Mojave facility that claimed the lives of three employees and seriously injured three others landed a damaging but not fatal blow to Branson’s plans.

Virgin Space Ship 2 (VSS-2, N339SS), named Enterprise, was finally rolled out in December 2009. The ship was dropped from the White Knight mother ship to perform a series of glides before advancing to powered flight almost four years later. But on Halloween Day 2014, Enterprise crashed during a test flight, killing pilot Mike Alsbury and seriously injuring the other pilot, who managed to bail out.

By this time, Blue Origin was well underway with preparations for the launch of New Shepard One. On April 29, 2015, the uncrewed NS1 reached more than 300,000 ft, but the propulsion module was not recovered. Seven months later, NS2

was launched; this time all components were recovered and reused for four additional flights that year. Two more NS systems followed, one of which carried an instrumented “crash test dummy” on mission 9 in a test of the abort/escape system.

Virgin Galactic took more than two years to analyze the Enterprise tragedy then make and test design changes that would prevent premature deployment of the “feather” reentry system. The replacement VSS-2, named Unity (N202VG) completed a series of glides before its first powered flight on April 5, 2018. By the end of the year, Unity’s two-man crew had reached 83 km (272,000 ft), a significant achievement but short of the heights reached by SpaceShipOne back in 2004.

The Final Lap

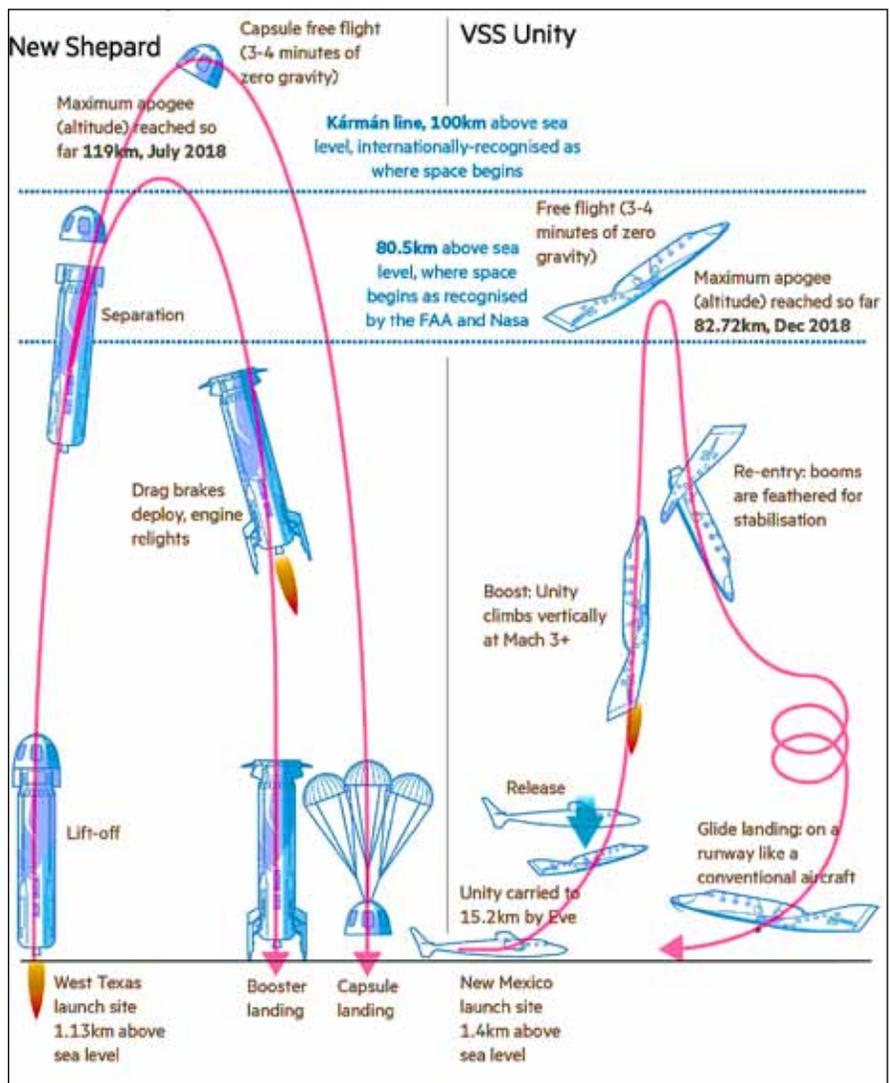
In early 2019 Blue Origin launched a series of missions carrying various NASA-sponsored payloads, marking the beginning of revenue flights for New Shepard. Furthermore, reusability was being proved. New Shepard 3 flew seven times between December 2017 and October 2020, averaging a mission about every 178 days.

As Blue Origin was hitting its stride in Texas, Virgin Galactic was kicking off operations in New Mexico, with Unity making its first flight (a glide) from Spaceport America in May 2020. A spaceflight scheduled for December was scrubbed when a computer malfunction caused engine shutdown, but on May 20, 2021, chief pilot Dave McKay and chief flight instructor Mike Masucci piloted Unity mission 22 to a shade over 89 km, leaving just one more ticket to punch — the one taking the boss himself to space.

Barely a month before, NS4 had completed New Shepard mission 15, tabbed as an “astronaut rehearsal.” Company personnel entered the capsule to perform pre-launch checks, etc., but exited before liftoff, leaving Skywalker the mannequin and 25,000 postcards to benefit Blue Origin’s Club for the Future foundation to soar to 106 km and return to earth precisely as planned, along with the propulsion module.

With that box checked, Jeff Bezos scheduled July 20, 2021 — the fifty-second anniversary of Neil Armstrong’s “giant leap for mankind” — as the date for his own small step in the same direction. But Branson managed to come away with bragging rights as the first billionaire to go into space aboard his personally financed vehicle.

A couple of nagging questions remain: How high must one go in order to cross “the final frontier” and, having done so, should he or she be designated as an astronaut? To NASA, the air force, and the FAA, space is that region beyond 50 miles or 80 km (246,000 ft) above Earth’s surface. But the Fédération



Blue Origin (L) and Virgin Galactic (R) flight profiles compared Credit: Financial Times (UK)

Aéronautique Internationale (FAI), the ratifying agency and keeper of air and space records, sets the boundary at 100 km (328,000 ft), the so-called Karman Line.

In the United States, for a non-military type to be officially recognized as an astronaut that person must have “Demonstrated flight beyond 50 statute miles above the surface of the Earth as flight crew on an FAA/AST licensed or permitted launch or reentry vehicle.” Furthermore, the would-be astronaut must perform “activities during flight that were essential to public safety, or contributed to human space flight safety.”

Several Virgin Galactic pilots now have their FAA Commercial Astronaut wings, but the FAA criteria would seemingly exclude the casual space tourist, including the Blue Origin riders. There’s an out, however. Honorary Commercial Space Astronaut Wings may be awarded “to individuals who demonstrated extraordinary contribution or beneficial service to the commercial human space flight industry.” The FAA’s Associate Administrator for Commercial Space Transportation has complete discretion in the bestowing of this honor, but it’s a safe bet that most or all the 2021 space alumni will be recognized.



VVS-2 Enterprise. The ship was lost in 2014 Credit: Virgin Galactic



VVS-2 Unity heads for a landing at Mojave Credit: Virgin Galactic

What's Next?

So where does that leave our protagonists, or others who may soon join the game? It's impossible to say what impact Virgin Galactic and Blue Origin may ultimately have on human spaceflight, but at this point it seems highly unlikely that regular folks will one day be able to book a few minutes of space time for the equivalent of, say, today's price of a flight from New York to Hong Kong.

A couple of potential players have already fallen by the wayside. Paul Allen's behemoth mother ship Stratolaunch (N351SL), while laying claim to the title of the world's largest aircraft, at least in wingspan, is struggling to outlive its creator. The hypersonic Talon-A and Sierra Nevada's reusable Dream Chaser will likely remain grounded, too.

At least for now, both Virgin Galactic and Blue Origin are operating in strictly sub-orbital mode, although Bezos has made it clear that his vision extends far beyond. Purely from the space tourism standpoint, Virgin Galactic may be reasonably well positioned. Launch preparation and post-mission refurbishment appear to be simpler, and presumably cheaper, than the same requirements for a liquid fuel booster and ballistic capsule, and the only launch pad required is a reasonably long runway.

With a modest increase in fleet size, it might be possible to launch a trip once a month or even more frequently. But how

many of the rich and famous will be willing to lay out a few bucks shy of half a million dollars for the experience, and for how much longer?

Cost aside (that for the moment remains unknown) the Blue Origin experience differs significantly from Virgin's offering, beginning with New Shepard's completely autonomous flight regime. The "crew" of NS mission 16, which included the brothers Bezos and 82-year-old Wally Funk, did not undergo months of rigorous astronaut training in preparation for the flight. After a couple of days of familiarization, they basically strapped themselves in and blasted off.

The next generation Blue Origin system, named New Glenn, is to offer heavy lift capabilities and a first stage designed to fly a minimum of 25 reusable missions. But failure to land a multi-year national security launch contract, and perhaps technical issues, has caused postponement of the initial launch until late 2022.

Then there's the elephant in the space tourism room — Elon Musk

and SpaceX. On September 15, thirty-eight-year-old billionaire Jared Isaacson and three "civilian" astronauts/companions



A New Shepard capsule shoots a jet of compressed air to minimize landing shock Credit: Blue Origin



Scaled Composites personnel pose with the massive Stratolaunch mother ship Credit: Scaled Composites

blasted off from Cape Canaveral on a three-day orbital mission in Space X's Dragon capsule, named Resilience. SpaceX has been in the spaceflight big leagues for a while, right up there with Boeing and United Launch Alliance. Orbital flights may be justifiably looked upon as the apogee of space tourism, but that's an entirely different space race than the attempts to create a business model around commercialized sub-orbital joy rides that, at least for the present, remain the hallmarks of Virgin Galactic and Blue Origin.



FAA Commercial Astronaut Wings, 2004 version Credit: FAA

What the future holds for Richard Branson and Virgin Galactic remains to be seen. But next up for Blue Origin will be William Shatner — Captain James T. Kirk of Starship Enterprise, who will indeed boldly go where no man, or at least no man his age, has gone before. No question about it, interesting times lie ahead. Fully two generations have come of age since the 1969 moon landing. These pioneering 2021 efforts may reignite an interest in human space exploration not seen since the glory days of the Apollo Program.



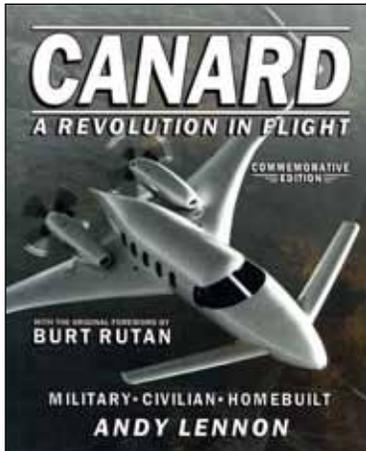
The Bezos brothers send a message to Earth while Wally Funk floats above Credit: Blue Origin



Richard Branson and friends enjoy a weightless moment Credit: Virgin Galactic

Book Reports

Canard; A Revolution in Flight, Commemorative Edition, by Andy Lennon. Aeronautical Publishers, www.aeronauticalpublishers.com. ISBN 978-0-938716-88-4, 2021. Softcover, 9.5"x7.5", 198 pages, numerous B&W photos and drawings, references appendix. \$24.95



We don't normally report on 25 year-old books, but this one caught our eye. While being a reissue of the 1984 publication, the material in the book provides a useful reference into how canard configured aircraft work and their advantages and disadvantages compared to conventional aircraft design. The author covers in four sections the fundamental concepts of canard design, experimental development

of canard configured aircraft, a review of modern canard designs including military, amateur build, ultralight, sailplanes and human and solar powered types. The author has done an excellent job of creating a single source reference work for canard aircraft up to 1984.

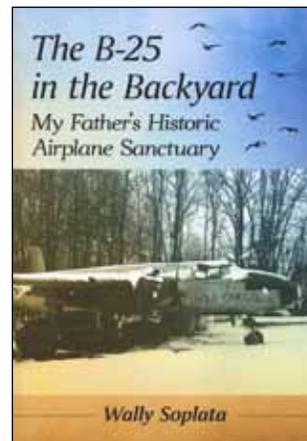
The introduction proclaims that general aviation has entered the "Canard Age" citing the Beech Starship, Old Man's Aircraft Co. OMAC-1, Avtek 400 and Piaggio GP-180. In the early 1980s this looked like a reasonable proclamation. Yet, 25 years later, Beech has scrapped the Starship, the OMAC-1 (Laser 300) and Avtek 400 never made it to certification and only variants of the Piaggio GP-180 (a hybrid canard design) is still in production. In the amateur built market, there was a flood of canard designs with Rutan's VariEze being one of the most popular home builds. These has been far surpassed by Van's RV's, a conventional design with more than 10,000 kits being built. It would appear that the "Canard Age" has come and, for the most part, gone.

The book examines a multitude of canard designs and discusses their performance, strengths and shortcomings. It looks at all the aviation segments – military, general aviation, amateur built and commercial designs. The history canard designs from the Wright brothers up to modern times is covered. This reviewer found the coverage of Golden Age designs and WWII of particular interest, learning about some designs that were unknown to him.

Putting aside the dated material like Burt Rutan's prediction in the Foreword of ". . . tandem wing commuters and jumbo airliners by 1995," and the lack of any apparent updating in the commemorative edition, this book is still an excellent resource on all things canard. For the price, it is a good addition to one's library, particularly if you have any interest at all on the history of canard configured aircraft. After all, the very first successful aircraft had a canard configuration - the Wright brothers' Flyer.

By Hayden Hamilton

The B-25 in the Backyard: My Father's Historic Airplane Sanctuary, Wally Soplata. McFarland Publishers, ISBN 978-1476680668, Softbound, 7x0.5x10-inches, 236 pages, 100 black & white photos. \$34.95



Most warbird enthusiasts will know the name Walter Soplata. He's known for a secretive aircraft collection in the woods outside of Cleveland, Ohio. And not just any aircraft collection, some of the rarest and some of the most historic aircraft in certain aviation circles.

Nothing was for sale at Soplata's place, but if you showed up at the property, you were more than likely to get a tour, rather than be chased away.

Then again, when Soplata was acquiring his collection, most of it was considered so much junk and an eyesore where it lay. To many, Soplata was removing a headache from their airport, so people were usually glad to see him. He was a bit unorthodox in his engineering when it came to disassembling aircraft, and even farther out when it was time to transport the hulks back to his property.

The B-25 in the Backyard was written by Soplata's son, Wally. It is a humorous tale of living with a father obsessed with airplanes and all that goes with them – engines, canopies, and a million other parts, new and old, that needed saving. Wally was inducted into the family airplane collection obsession at an early age, and his strong teenage back, willing to do whatever his father needed, was vital to the elder Soplata's aircraft recovery endeavors.

What did they bring home? How about a couple of Corsairs – including Cook Cleland's Race 74, the blue and white F2G in which he won the 1947 National Air Races in Cleveland, the Corsair *Lucky Gallon*, a pair of B-25 Mitchell bombers, an ex-NACA North American F-82E Twin Mustang, an XP-82 Twin Mustang, the Douglas XBT2D-1 Skyraider, a KC-97 Stratotanker, a TBM Avenger torpedo-bomber, a P2V Neptune patrol bomber, most of a C-82 Packet, the nose section of B-52B, 53-0394, *Lucky Lady III* that led *Operation Power Flite*, the circumnavigation of the globe with two other B-52s in January 1957, and much of a Convair B-36H Peacemaker 10-engine bomber – just to mention a dozen or so of the aircraft in Soplata's collection.

The trials and tribulations of working with his exacting, yet nutty-professor father and his Rube Goldbergesque style of engineering as applied to the physics of dismantling an aircraft are amazing, funny, and in some instances, simply insane. Imagine towing the B-25J-25-NC, 44-30129, *Wild Cargo* home using a makeshift trailer and a six-cylinder Chevy Suburban – all while dodging the police because the load is too wide at best and certainly unsafe. The true tale of moving the Vought F7U Cutlass more than 600 miles, from Boston to Cleveland, is stranger than fiction! Had there not been photos, the story simply could not be believed.

Young Wally Soplata had the dream that his father did not – to fly. He spent the majority of his Air Force career instructing in T-37s, T-38s, and C-141s. Retiring from the Air Force at the rank of lieutenant colonel, Wally Soplata went on to fly with the airlines in the Airbus A300 and A310, the Boeing 727, 757, 767, 777 and the Douglas DC-10. He still flies and instructs, but now in various general aviation aircraft.

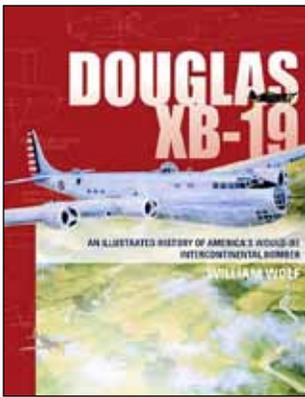
Retirement also gave Wally Soplata the opportunity to reveal what it was like to grow up in the Soplata household.

Walter Soplata's dream was to present his aircraft collection in a museum, but unfortunately that never came to pass. After his death in 2010 at 87 years of age, Soplata's children began the task of liquidating his aircraft collection. The F2G racer was restored. Tom Reilly and his team returned the XP-82 to the air; today the only one of its type flying. Chuck Wahl has the FG-1A *Lucky Gallon* in the Vulture's Row shop awaiting its turn for restoration. And Dave Hall and the crew at MotoArt have turned the skin of the former Soplata B-36 and B-52 into "Plane Tags," enabling warbird enthusiasts to own part of the Soplata Collection.

Reading *The B-25 in the Backyard* felt like one's best friend had sat down and opened up about his family life, telling you the whole story – the good, the not so good, and the intimate details of a father and son relationship and their combined love affair with airplanes.

By Nicholas A. Veronico

Douglas XB-19, by William Wolf. Schiffer Publishing, Ltd., 4880 Lower Valley Road, Atglen, PA 19310. www.schifferbooks.com ISBN: 978-0-7643-5232-4, 2017. Hardbound, 11.25" x 9", 128 pages, numerous photos, pictures and graphics. Price: \$45.00



As the cover states this is truly "An Illustrated History of America's Would Be Intercontinental Bomber" – truly one of the first (and possibly only) such a work. As one who had a color photo of the introduction of this unique aircraft to the

aviation history world over his bed all the time I was growing up, and the Douglas Santa Monica plant within 1.5 miles of this bedroom, I had a great interest in it. Yet there was very little available in the research books and magazines I had access to. Now here comes one of Schiffer's prolific authors with just about anything you wanted to know about the "Hemispheric Bomber." Born under the need for a very long range bomber, even before the start of WWII, its first designation was a part of the XB-19 competition between Boeing, Douglas and Sikorsky. In this book you will see the names and quotes from some of the greatest participants in the tremendous growth and use of aircraft in warfare during WWII. From Donald Douglas to Hap Arnold, you will find photographs of the manufacturers' models of proposed early long range bomber projects – Martin

XB-16, Boeing XB-15, Boeing XB-20, Sikorsky XBLR-3. The author has thoroughly covered the participation and support from such American aviation leaders as Gen. Oscar Westover, Engineer/Executive Arthur Raymond and how many have heard of Schuyler Kleinhans? Not only did he become the chief engineer on the B-19, but he went on to being a project leader on everything from the later model DC-3s through the DC-9s.

This book is full of detailed information such as the above, yet still covers the history of the military bomber during the 1920-1932 periods with such names as Barling, Keystone, Super Cyclops, Curtiss Condor on to the Boeing and Martin bombers that were available right up to the beginning of World War II. For all "Golden Age" enthusiasts he even covers the MCD-392 – a proposal from Wright Field for a behemoth with a wingspan of 280 feet (that's greater than the one that was eventually built for the B-36). He then goes into the work that Douglas was doing on larger aircraft including the DC-4E. As he covers the construction and description of the XB-19 he includes a multitude of photographs that range from the jigs for the fuselage up to interior shots of the fuselage, and if you want three-view drawings he has them, including fuselage station numbers and wing rib locations. You will enjoy the photos of the "Bridge Deck" and the number of crew members it could contain. Finally he covers the weaponry and gun turrets that provided subsequent aircraft builders with ideas of what could, and what could not be done, in order to best provide some level of "self-protection" for long range bombers.

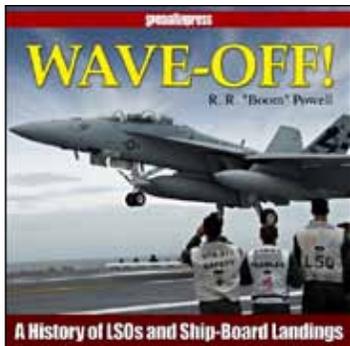
As time proceeded, and the need for this large a piece of equipment fell behind the concept of producing larger numbers faster and getting them into combat, others tried to provide the aircraft to follow the B-17s, B-24s and B-29's that were already in production – look for the section on the "also-rans".

Once the XB-19 finally flew on June 27, 1941 and landed at March Field (and don't miss the photos lifted from the Movietone Newsreel of the landing) became a flying laboratory for the discovery and development of many features that were built into its successors – B-29, B-36, B-50 and even a number of long range airliners that followed it into the air. The author concludes this section with a quote from the July issue of *Flying Magazine* that succinctly answers the question, "Of what value is the B-19?"

In his last two chapters the author covers the XB-19 and XB-19A at Wright Field, and leaves us with photos during its stay at Davis-Monthan and its final demise at the smelting yards, except for the main wheels – one of which is on exhibit at the Hill AFB Aerospace Museum in Utah, and the other is in the Planes of the Past area of the NMUSAF, Dayton, Ohio. Mr. Wolf has included a few photos of this sad ending of a giant's life, including a color photo on the back cover of two line ups of B-29s at Davis-Monthan with (if your eyes are good enough) the final red tail of the B-19 at the far end. She wasn't beautiful, but she helped fulfill the dreams of those men who realized the benefit of having strategic range bombing in your country's defense inventory.

By Tom Butz

WAVE-OFF! by Robert R. “Boom” Powell, Commander, USN (Ret.). Specialty Press, Address: 838 Lake Street South, Forest



Lake, MN 55025, www.specialtypress.com. ISBN: 978-1-58007-235-9, 2017. Hardbound, 10.5”x10.5”, 192 pages, numerous photos, pictures and graphics. Price: \$39.95

In less than 200 pages this retired naval officer sets forth a history of LSOs and Ship-Board Landings. From its beginning in 1910 to this

century’s supersonic jet operations the author has given us a very well written narrative to accompany the many unique and colorful photos that he has located in collections and military offices around the country. It is interesting to note that the true beginning of carrier aviation, other than a few experimental attempts by Curtiss and the US Navy, did not develop further in the United States. Much initial work and development took place in England that led to “deployment” in July 1918 of seven Sopwith Camels to attack and destroy the Zeppelin sheds and Zeppelins located in Tondern, Norway. More than anything else this demonstrates the level of research and writing of the author, and it is repeated over and over again in this fine volume.

Following this interesting “Prologue” Commander Powell leads us into the first steps in naval aviation operations between 1918 and 1930. Of interest to this reader was the coverage of carrier development elsewhere in the world – from England’s Furious, Eagle and Hermes to Japan’s Hosho and France’s Bearn and finally the U.S.’ Langley. It is in this chapter that the author first introduces us to the concept and birth of the LSO position. Ending this chapter “Boom” gives us one of the most comprehensive tables regarding Japanese Aircraft Carrier Names – thanks to his research into Naval Aviation News.

Proceeding through the 1930’s and into WWII there are many illustrations and photos of LSOs in action, including a graphic display of US Navy LSO signals. Following this is one of the most compelling sections of this book – “Practice, Prepare and Combat 1931-1941.” Included in this section are some photos that demonstrate how dangerous and exciting flying off of, and landing on, aircraft carriers; how about a JATO takeoff of a P2V Neptune, with a conclusion provided by the author of the feasibility of this type of operation. Note the various types of “paddles” used, as well as the variety of clothing worn by LSOs.

Now the author gets down to the meat of this book – “War in the Mediterranean and Atlantic,” and “Carriers Supreme, The Pacific 1942-1945.” It is interesting to see his coverage of both combatants, with photos.

Next comes his presentation of the expanded role of the aircraft carrier after World War II and into the Korean War. From the importance of the LSO when attempting to bring larger aircraft capable of carrying the nuclear weapons available

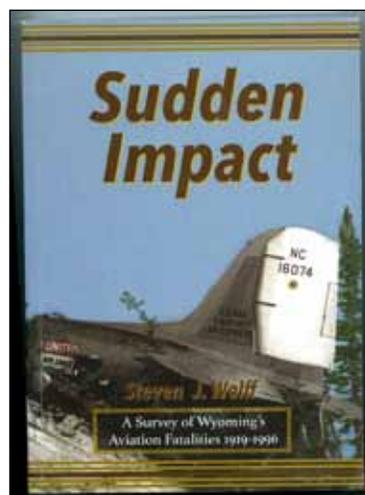
at that time in regular use, and the transition into jet operations, with a very interesting page about the “Panther as Movie Star.”

Throughout this fine book the author has included “box stories.” In these are tidbits of info about the carriers’ history and the incidents experienced during his career as an LSO, included in one is a painting of a Mustang approaching the USS *Shangri-la*. Two of the most interesting of the vignettes are those on the C-130 and U-2 operations.

The author has fully covered all aspects and details of LSO operations, including how carrier landings are currently being handled. His Endnotes are extensive letting the reader know his sources of information.

By Tom Butz

Sudden Impact, a Survey of Wyoming’s Aviation Fatalities 1919-1996, by Steven J. Wolff. Hercules Books, Amarillo, Texas. ISBN 978-0-662-10364-7, 2018. 353 pages, numerous



B&W photos, drawings and charts, Bibliography. Can be purchased from the author; \$35 payable to Steven Wolff, 1222 Liberty Drive, Lexington, NE 68850, plus \$4.50 shipping and handling.

The author examines in detail 23 crashes involving both military and commercial operations. Each accident is covered by discussing the aircraft type, its operating characteristics, the local weather at the

time and the specifics associated with the accident. Details presented in the accident investigations that were conducted. A post-mortem review is made that examines the decisions made (or thought to have been made where there were no survivors).

Not all the covered accidents involved fatalities. One of particular interest involved a young F/O Charles Yeager flying a Bell P-39Q out of Casper AAB. While making simulated gunnery passes on a formation of B-24s, the supercharger on Yeager’s plane disintegrated causing the cooling system to be damaged and resulting a subsequent engine fire. Yeager was able to bail out of the crippled plane. Interestingly, this was all witnessed by Lt. Clarence “Bud” Anderson. Both pilots would go on to make names for themselves during WWII and later.

One can always learn something through better understanding of what created a specific situation and how the outcome of it is influenced by the decision making process associated with the event. That is why we spend so much time analyzing aircraft accidents – to see what we can learn and how it might be prevented in the future. Mr. Wolff has done an excellent job in this review of Wyoming aircraft accidents and is well worth the read.

By Leland Pugsley

President's Message

The American Aviation Historical Society, now celebrating its 65th year of continuous publication, marks the passing of William T. Larkins, the remaining of three founders of AAHS, on September 9, just a few months shy of his 100th birthday.

Bill Larkins, along with Willis Nye, and Chalmers Johnson, developed a concept for an aviation society that would contribute accurate and timely information for aviation photography enthusiasts. Bill Larkins himself was a longtime aviation photographer, and worked as an audio visual specialist for the University of California, Berkley.

Bill is remembered by many in the aviation community, not only for his extensive aviation knowledge, his published books and articles, but his enthusiasm for sharing his knowledge with others. It was that passion for sharing with others that forms the basis of our founding mission. Long time members, such as Bob Parmerter, have shared their recollections of Bill and his influence on their lives. Bob expressed the shared sentiment well with these words:

“We will remember Bill as a founder of AAHS but also for his books, articles, wonderful photographs and for me the fine example he set of aviation historians sharing both their knowledge and their photos. He shared hundreds of Beech 18 negatives with me so that I could make prints, and even more important was his encouragement for me to continue my work with the Beech 18 and subsequently to publish my work.

I have images in my mind of Bill standing on the roof of his early Ford coupe to get a better angle of an aircraft, spending two days photographing the 1,000+ surplus WWII aircraft stored at Ontario, Calif., and then renting a Piper Cub to photograph them from the air. I fondly recall sharing with Bill the excitement of discovering a very unique aircraft to shoot, of going to extraordinary means to get a shot, of waiting for endless minutes for the sun to come out or of finding a significant photo or document in an archive, and sharing it with the aviation community. Bill will live on in his wonderful books, photos and inspiration that we will hopefully pass on to another generation. I'm very proud to be able to say I was a friend of Bill Larkins.

Regards, Bob Parmerter

In my first year as President of AAHS, in 2012, I made a pilgrimage to Bill's home, a trove of aviation lore in Concord, Calif., to discuss his vision for AAHS. Bill remained steadfast in his vision that AAHS was meant to make aviation history photos, negatives, and collected aviation material available to the world, and not held for a privileged few. It has been a commitment to this view that has spurred AAHS to dramatically increase conversion of our images to digital format so our



Jerri & Bill-Larkins 2012

archives can be of use to others, as our founders envisioned.

More information on Bill's life and achievements can be found in a two part article "The Life and Work of Aviation Photographer & Historian William "Bill" Larkins", published in *AAHS Journal* Vol 62, #3, and *AAHS Journal* Vol 66 No 1, by Jim Geldert.

We all wish a heartfelt 'Thank You' to Bill, and our ongoing members for enriching the aviation community through our shared interests.

Jerri Bergen
AAHS President

AAHS FlightLine

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Aces in a Day?

The Air War in the South Pacific, Revisited

By Joe Martin

Credit for air-to-air victories has been a matter of conjecture and controversy since the idea was first introduced during the Great War. For better or worse, the air ace scoreboard is firmly embedded in aviation history. Prolific Australian aviation historian and author Michael John Claringbould, working alone and in conjunction with others, has produced a steady stream of books about WWII aerial operations in the South and Southwest Pacific areas. Mining contemporary records and previously untapped Japanese sources, Claringbould presents fresh perspectives and challenges many errors and long-standing misconceptions about the Pacific air war and those who fought it.

Like sports records, aerial victory totals, whether those of individuals or units, are not apt to be officially revised, but Claringbould has placed a figurative asterisk beside many of those records established in the South Pacific during WWII. Here we take a brief new look at a trio of Pacific “aces in a day,” based on sample chapters from Claringbould’s recent works, supplemented by general war histories and other sources.

The Solomons, mid-1943

After withdrawing from Guadalcanal following six brutal months of land, air and sea combat, the Japanese correctly guessed the Allies would move northward to New Georgia. At Rabaul, the Japanese command made a fateful decision: Stall or roll back the Allied advances in the Solomons and along the north coast of New Guinea.

That advance had begun modestly enough with the unopposed U.S. landing in the Russell Islands in February 1943, providing air bases 55 miles closer to Rabaul and some relief for the overcrowded Guadalcanal fields. Meanwhile, the waters around Lunga and Tulagi were packed with transports as Admiral Halsey’s South Pacific forces geared up for their next operation. To attack these juicy targets, the Japanese assembled a considerable air armada at Rabaul and forward bases on Bougainville. All available D3A “Val” dive bombers and G4M “Betty” medium bombers were gathered as a strike force, to be escorted by several *kokutais* of A6M Zeros, including carrier air groups based ashore.

Operation I-Go

Ordered by Adm. Yamamoto Isuroko himself, the Japanese aerial counterattack, codenamed *I-Go*, began in earnest towards the end of March. But circumstances had changed since the dark days of October and November when the “Cactus air force” fought for survival in the skies above Guadalcanal. Commander, Aircraft, Solomons (COMAIRSOLS) now had at his disposal around a 100 Navy, Army, and Marine fighters, including newly arrived F4U Corsairs. For offensive operations, several



Jimmy Swett claimed seven Val dive bombers in a single mission. Here he poses for a publicity shot beside a Wildcat. (Photo from Naval Historical and Heritage Command)

squadrons of SBDs and TBFs were on hand, along with some USAAF heavies. A contingent from the Royal New Zealand Air Force augmented the American effort.

The *I-Go* operation brought on some of the largest air battles of the war, frequently involving well over 200 aircraft from both sides as the Japanese targeted not only Guadalcanal but Port Moresby and Milne Bay in New Guinea. Claringbould has devoted an entire book to this brief but violent air campaign. On April 7 the Japanese Naval Air Force opened the action when a force of 70 dive bombers, escorted by more than twice as many Zeros, staged strikes through Bougainville airfields aimed at four separate allied shipping concentrations around Guadalcanal and nearby Sealark Channel.

Three ships were sunk, but both sides seriously over-claimed the damage done. The Japanese pilots claimed 49 U.S. aircraft downed, against seven actually lost. The Americans



Pre-war, Jim Shubin was a member of the Kenyon College (Ohio) flying club. He's 4th from right in this 1940 shot. To test your aero knowledge, identify that monoplane in the background. (Photo from *Aviation News*, Nov. 6, 1944)

initially claimed 37 kills, including seven Vals reported knocked down by Lt. James E. Swett of VMF-221. In reality, a dozen each Vals and Zeros had gone down from all causes. Swett's claims stood, winning him the Medal of Honor, but he was forced to ditch himself, barely escaping his sinking Wildcat. Claringbould concedes that Swett's claims are difficult to reconcile, but after considering the number of Vals claimed by others and shipboard AA, concludes that the score was probably two or three.

The *I-Go* battles were not all one-sided Allied cake walks. The April 14 "St. Valentine's Day Massacre" over Kahili cost AirSols nine aircraft — including all four P-38s flying top cover — in exchange for three Zeros lost. Claringbould examines this action in Volume 3, Chapter 6, of *Pacific Adversaries*. Among the interesting details is a brief account of the 11 A6M2-N "Rufe" floatplanes engaged in the fight, none of which were hit.

On April 16, Yamamoto called off *I-Go*, having grossly overestimated allied losses and incorrectly believing the Japanese had won a great victory. Two days later, his Betty was shot down in the famous long-distance intercept executed by P-38s of 13th Air Force's 339th Fighter Squadron.

The Air Battles Continue

After Yamamoto's death, the Japanese attacks slackened for a time, but began to renew in June, culminating in the June 16 raid that Claringbould dissects in Volume 3, Chapter 9. In this air battle, one of the largest in the Pacific War, Lt. Murray "Jim" Shubin of the 339th FS was credited with five Zeros downed, all in full view of the troops below.

As Claringbould points out, this was a confused melee indeed. Some two dozen Vals, escorted by 70 Zeros, were met by 104 Allied fighters, including P-38s, P-39s, F4Fs, F4Us, and P-40s flown by both U.S. and RNZAF pilots. Every Allied unit claimed at least one kill. In addition, the vessels under attack threw up a curtain of anti-aircraft fire. At the end of the day, Allied airmen recorded 79 air-to-air kills in addition to the 27 claimed by AA fire — exceeding the total number of Japanese aircraft involved. By Claringbould's calculations,



Lt. Murray J. Shubin stands by his P-38G-LO, 43-2242, "Oriole." Shubin became Thirteenth Air Force's first "ace in a day" when he was credited with five Zeros in the 16 June 1943 battle over Guadalcanal. (Photo from U.S. Army Air Corps, NARA)

actual Japanese losses were 14 Zeros and 10 Vals lost to Allied fighters, with three more Vals falling to ships' guns.

Shubin's initial combat report claimed two definite kills and four probables. Three other kills were allegedly witnessed, through binoculars, by a Captain Mueller of the 35th Infantry. Considering that the action took place several miles out to sea, so certain an identification would've constituted a most remarkable exhibition of visual acuity. In all, the 339th jocks claimed 11 kills, an obviously inflated figure when matched against Japanese records.

Claringbould concludes that Shubin likely bagged one or two of these, with other members of the squadron getting the three witnessed by Capt. Mueller. In any case, the 339th C.O. upped Shubin's claim to five confirmed. So impressed was "Bull" Halsey that Shubin was invited aboard the admiral's flagship to be presented with the Distinguished Service Cross.

Just four days prior to Shubin's exploits, Navy Lt. (j.g.) Vernon E. Graham of VF-11 "Sundowners" also made ace in a day, an episode apparently not yet placed under Claringbould's microscope. Graham's day began almost by accident when four divisions of Wildcats returning from escorting a PBX mission encountered some 90 Zeros north of the Russell Islands. Already short of fuel but unable to break away from the aerial skirmish, Graham kept fighting and firing, downing five zeros in the process — his only claims of the war.

When the engine finally sputtered and died, Graham managed a dead stick landing on the Russells airstrip. Unbeknownst to him, his F4F had one wheel nearly shot away. The landing gear collapsed on touchdown and the plane cartwheeled, knocking him unconscious. He came to in hospital with a fractured skull and broken collar bone. But he was alive. He was awarded the Navy Cross and after months of recuperation sent back Stateside for the duration.



Vern Graham notched all five of his wartime kills in one day.
(Photo from Osprey Publications)

VF-11 claimed 14 Zeros shot down in the June 12 encounter, while at about the same time Bob Westbrook of the 44th FS claimed his fifth of an eventual 20 victories. Surviving Japanese records are apparently too sparse to permit a detailed matching of accounts, but Christopher Shores' *Japanese Naval Air Force Fighter Units and Their Aces, 1932-1945* shows four Zeros lost, along with three other pilots. Assuming the aircraft flown by those three to have been shot down, the total rises to seven on the day. How many of those fell to Vern Graham's guns is impossible to know.

End of the line in the South Pacific

By New Year's Day 1944, air combat in the South Pacific had essentially ended. But Navy, Marine, and New Zealand crews would continue to pound Rabaul for months to come. On Bougainville, ANZAC forces, supported by RNZAF and RAAF squadrons, would battle isolated Japanese units until the end of the war. MacArthur's Southwest Pacific forces, including the U.S. Fifth and later Thirteenth Air Forces, would continue to move up the New Guinea coast then on to the Philippines.

Heavy losses of aircraft and irreplaceable pilots and aircrew suffered during the Guadalcanal campaign and the subsequent

attacks aimed at preventing further Allied advances up the Solomons broke the back of the Japanese Naval Air Force. The war would go on for another two years, and Japanese pilots would continue to chalk up the occasional score against Allied aircraft and shipping, but after the summer of 1943 Japanese airpower, even with the advent of much deadlier kamikaze attacks, never presented a serious threat to the relentless Allied advance across the Pacific.

More by Claringbould

The outstanding feature of Claringbould's work is his ability to ferret out details hitherto unknown to the Western reader, and probably to most Japanese as well. The *South Pacific Air War series*,* now totals four volumes: *The Fall of Rabaul, December 1941-March 1942*; *The Struggle for Moresby, March-April 1942*; *Coral Sea and Aftermath, May-June 1942*; and the most recent release, *Buna and Milne Bay, June-September 1942*.

A companion series, *Pacific Adversaries*, features essentially stand-alone chapters, each detailing "stories of aerial warfare in the South Pacific ... chosen because the relevant Japanese and Allied records accurately match." The narratives are illustrated by many photos most readers will not have previously seen. Color profiles of the principal aircraft involved, also done by the author, augment the presentations.

For the scale modeler or hardcore aviation buff, there's *Pacific Profiles*, three volumes of which have appeared to date. These gems cover individual Japanese and units by function (e.g., fighters, bombers, etc.) or, as in Vol. 3, by aircraft type: *Allied Medium Bombers: Douglas A-20 Havoc Series, Southwest Pacific 1942-1944*. In addition to 80 or so color profiles per volume, there are unit insignia, various charts, maps, and diagrams, with little-before-seen photographic evidence, some of it in color. Geographically, parts of these campaigns — not to mention the Central Pacific drive under Adm. Chester Nimitz — lie outside Claringbould's current boundaries. Wherever he turns next in his reexamination of the Pacific air war, Michael John Claringbould can be counted on to provide more must-read material.

* The first three volumes were reviewed in *Flightlines* #198, 199, and 201.

NEW MEMBER DRIVE

The AAHS is in its sixth decade of operation and continues to face the challenge of sustaining its membership.

As current members, **YOU** can contribute to the success of helping grow the organization.

Did you know that more than **50 percent of all new members** learned about the AAHS from a friend? Do you have friends who are interested in aviation history?

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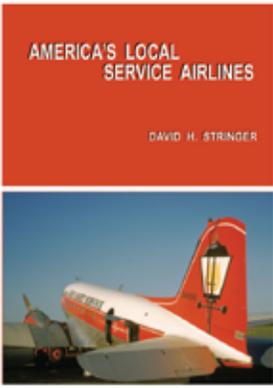
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AAHS Plane Spotter



Collections filed away in secure storage cabinets are safe, but of little use to anyone without an index and catalog. Even then, finding useful images can be a laborious task of having to pull, examine and return images in the files. This can lead to potential damage from handling the photos and/or loss through misfiling of the photo. Using digital images to preview a collection can substantially reduce these risks.



Catalogers having to work with the actual images are restricted in both access and “useability” (work with a magnifying glass to extract information from a 35mm slide is both time consuming as well as physically challenging for some).



AAHSPlaneSpotter.com homepage. Check out the DEMO to see and understand how the application works.

Like many organizations with large photographic collections, the AAHS is challenged by the desire to make its collection readily accessible, which requires cataloging the images along with digitizing them so they can be put on the Internet.

Traditionally the process has been to catalog first and then digitize. This requires staff or volunteers to physically examine each photograph (slide, negative, print or more recently digital images). To accomplish this the individuals doing the work had to physically come to the collection location and work there. This approach limits the both the number of catalogers that can work on cataloging at any one time, and necessarily limits the staff to those individuals that live conveniently close to the collection. This results in a painfully slow process in creating the catalog.

To illustrate, assume that only two individuals can work at a time on a collection of 1 million images and that these individuals are able to work eight hours a day, five days a week, and that they can catalog 30 images an hour (one every two minutes). Doing the math, it would take 16,667 man/hours to catalog the collection. Or, 417 weeks (8.3 years allowing for two weeks off/year).

The assumptions used in this example are for purposes of comparison only and are probably overly optimistic in terms of both throughput and available hours per week. The point is to illustrate that the more individuals working on the project, the faster it can be completed. The key is to eliminate the inhibitors that keep the project from progressing – access to the collection and requirement location of the catalogers. Doing this greatly expands the resources available to rapidly achieve the objective of making the collection generally available.

This was the dilemma that the AAHS faced and after experimenting with several different processes realized that the only practical way to speed up the process was to turn it on its head. Thus was born AAHSPlaneSpotter.com. We realized that it was much quicker to digitize the collection first – no special skills involved and to catalog directly from the digital images. That way, it is possible to get an accessible working, cataloged collection to which the missing metadata (information written on the slide mount, back of a print, or on the negative envelope) can be added later and/or on demand.

By taking this approach and building a special, web-based application, catalogers can work with high resolution digital images from the convenience of their home with the only requirements for access being a computer with a web browser and access to the internet. This approach allows for a potential infinite number of volunteers (AAHS membership is NOT REQUIRED) with a worldwide distribution to assist in the cataloging activity.

The high resolution images are uploaded to the Internet, batches of images are created and assigned to the volunteer to work on. The volunteer enters the data directly into to a mirror (copy) of the master image database, which is checked before



Volunteer catalogers are assigned batches of images to catalog (the demo batch is shown here). They can work at their own speed, in any order, at any time, anywhere they have access to the internet.

loading into the master database. On completing a batch, the volunteer simply sends an email to the administrator who would then assign a new group of images for the volunteer to work on.

Using the previous example and assuming we have 50 catalogers working on our project collection, they would be able to complete cataloging 1,000,000 images in just 17 weeks.

The obvious downside to this approach is that the cataloged images are missing any metadata that may have been associated with them – location, photographer, contributor, any notes, etc. This information is not lost, but merely deferred to be added at a later date. This metadata can be added via either an established program or on demand – where someone requests this information in conjunction with the use of a particular



Each image is a high resolution image that can be panned and zoomed in order to better see small details like registration numbers, unit insignia and the like. Data entry is a form where the volunteer enters the information, which on submission is loaded into an online database.

image. Regardless, the important point is that the collection is available for general access, which otherwise would not be the case.

Think you would like to help with this initiative? Simply go to www.AAHSPlaneSpotter.com and explore the online demo. Then simply click the “SIGN UP” button to get the process going.

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As of this date, the following CDs are available. Each CD contains between 70 and 140 images depending on content.

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These CDs are available to members for \$19.95 (\$29.95 non-members) each plus shipping (\$2.50 U.S., \$10.00 International - add \$1.00 for each additional CD). Order forms are available online and on request, but a note along with your donation specifying your particular interest is sufficient.

Proceeds go to support the preservation of the photo archives. Do you have a particular interest or suggestion for a CD in this series? Drop us a line or email the webmaster (webmaster@aahs-online.org). We are currently researching the possibilities of offerings covering the following areas: Connies Part II, XP-56, Northrop X-4, Bell Aircraft, and Early Lockheeds.