



AAHS FLIGHTLINE

No. 176, Third Quarter 2011

American Aviation Historical Society

www.aahs-online.org



An early model Boeing B-17 captured at sunset at Langley Field, Va., in July 1942. (Alfred T. Palmer, Library of Congress, LC-USW36-202)

Amazing WWII Aircraft Facts

Some of you may already have seen a version of this floating around the Internet. Even so, the information provides an excellent insight into the magnitude of the effort expended during WWII. For “Baby Boomers” that came along after the war, it is hard to grasp the degree of sacrifice made by their parents. In order to provide a perspective that

is more tangible, the dollar expenses are also presented in terms of 2011 equivalent dollars.

During WWII, the U.S. manufactured 276,000 aircraft of all types. Of these, 43,000 planes were lost overseas, of which 23,000 were lost in combat. During the same period, 14,000 aircraft were lost in accidents in the continental United States.

The U.S. civilian population maintained a dedicated effort for four years, many working long hours seven days per week and often also volunteering for other work. WWII was the largest human effort in history.

The Cost of an Aircraft in WWII & Today's Dollars

Type	Org. Cost	2011 \$
B-17	\$204,370	\$2,890,000
P-40	\$44,892	\$635,000
B-24	\$215,516	\$3,048,000
P-47	\$85,578	\$1,210,000
B-25	\$142,194	\$2,011,000
P-51	\$51,572	\$729,000
B-26	\$192,426	\$2,721,000
C-47	\$88,574	\$1,252,000
B-29	\$605,360	\$8,560,000
PT-17	\$15,052	\$213,000
P-38	\$97,147	\$1,374,000
AT-6	\$22,952	\$325,000

Data from *Flight Journal* magazine

Marine Corps aircraft production.

Planes a Day Worldwide

From Germany's invasion of Poland on Sept. 1, 1939, and ending with Japan's surrender on Sept. 2, 1945, covered 2,433 days. From 1942 onward, the United States lost an average of 170 planes a day.

The Cost of War

While the original cost of a B-17 was roughly \$200,000 per plane, in today's dollars producing the 12,731 units that were made would require the outlay of roughly \$32,680,000,000. And, the total cost for just the combat aircraft listed in the table exceeds \$200 billion in today's dollars. And that doesn't even count cargo, training, liaison and U.S. Navy/

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Built on the same assembly line as the B-24, Consolidated C-87 Liberator Expresses being loaded at the Consolidated plant in Fort Worth, Tex., in October 1942. (Howard R. Hollem, Library of Congress, LC-DIG-fsac-1a34962)

If you were to line up the total B-17 production (12,731) wingtip to wingtip, they would extend 250 miles. How many are 1,000 planes? Approximately, 1,000 B-17s carried 2.5 million gallons of high octane fuel, required 10,000 airmen to fly and protect them, and on a long-range mission (~800 miles) would carry 9,000 500-lb bombs.

The Numbers Game

- 9.7 billion gallons of gasoline consumed, 1942-1945.
- 107.8 million hours flown, 1943-1945.
- 459.7 billion rounds of aircraft ammo fired overseas, 1942-1945.
- 7.9 million bombs dropped overseas, 1943-1945.
- 2.3 million combat sorties, 1941-1945 (one sortie = one takeoff).
- 299,230 aircraft accepted, 1940-1945.
- 808,471 aircraft engines accepted, 1940-1945.
- 799,972 propellers accepted, 1940-1945.

Sources: Rene Francillon, *Japanese Aircraft of the Pacific War*; Cajus Bekker, *The Luftwaffe Diaries*; Ray Wagner, *American Combat Planes*; Wikipedia.

According to the AAF Statistical Digest, in less than four years (December 1941- August 1945), the U.S. Army Air Forces lost 14,903 pilots, aircrew and assorted personnel plus 13,873 airplanes --- *inside the continental United States!* They were the result of 52,651 aircraft accidents (6,039 involving fatalities) during this 45 month period.

Think about those numbers. They average 1,170 aircraft accidents per month - nearly 40 a day. (However, less than one accident in four resulted in totaled aircraft.)

It gets worse.....Almost 1,000 Army planes disappeared en route from the U.S. to foreign locations. But an eye-watering 43,581 aircraft were lost overseas including 22,948 on combat missions (18,418 against the European theater) and 20,633 attributed to non-combat causes overseas.

In a single 376 plane raid in August 1943, 60 B-17s were shot down. That was a 16 percent loss rate and meant 600 empty bunks in England. In 1942-43 it was statistically impossible for bomber crews to complete a 25-mission tour in Europe.

Pacific theatre losses were far less (4,530 in combat) owing to smaller forces committed. The worst B-29 mission, against Tokyo on May 25, 1945, cost 26 Superfortresses, 5.6 percent of the 464 dispatched from the Marianas.

On average, 6,600 American servicemen died per month during WWII, about 220 a day. By the end of the war, over 40,000 airmen were killed in combat theaters and another

18,000 wounded. Some 12,000 missing men were declared dead, including a number "liberated" by the Soviets but never returned. More than 41,000 were captured, half of the 5,400 held by the Japanese died in captivity, compared with one-tenth in German hands. Total combat casualties were pegged at 121,867.

U.S. manpower made up the deficit. The AAF's peak strength was reached in 1944 with 2,372,000 personnel, nearly twice the previous year's figure.

The losses were huge---but so were production totals. From 1941 through 1945, American industry delivered more than 276,000 military aircraft. That number was enough not only for U.S. Army, Navy and Marine Corps, but for allies as diverse as Britain, Australia, China and Russia. In fact, from 1943 onward, America produced more planes than Britain and Russia combined - and more than Germany and Japan together during the same period.

However, our enemies took massive losses. Through much of 1944, the Luftwaffe sustained uncontrolled hemorrhaging, reaching 25 percent of aircrews and 40 planes a month. And in late 1944 into 1945, nearly half the pilots in Japanese squadrons had flown fewer than 200 hours. The disparity of two years before had been completely reversed.

Experience Levels

Uncle Sam sent many of his sons to war with absolute minimums of training. Some fighter pilots entered combat in 1942 with less than one hour in their assigned aircraft.

The 357th Fighter Group (often known as The Yoxford Boys) went to England in late 1943 having trained on P-39s. The group never saw a Mustang until shortly before its first combat mission.

A high-time P-51 pilot had 30 hours in type. Many had fewer than five hours. Some had one hour.

With arrival of new aircraft, many combat units transitioned in combat. The attitude was, "They all have a stick and a throttle. Go fly them." When the famed 4th Fighter Group converted from P-47s to P-51s in February 1944, there was no time to stand down for an orderly transition. The Group Commander, Col. Donald Blakeslee, said, "You can learn to fly '51s on the way to the target."

A future P-47 ace said, "I was sent to England to die." He was not alone. Some fighter pilots tucked their wheels in the well on their first combat mission with one previous flight in the aircraft. Meanwhile, many bomber crews were still learning their trade: of Jimmy Doolittle's 15 pilots on the April 1942 Tokyo raid, only five had won their wings before 1941. All but

one of the 16 copilots were less than a year out of flight school.

Flying Safety

In WWII flying safety took a back seat to combat. The AAF's worst accident rate was recorded by the A-36 Invader version of the P-51: a staggering 274 accidents per 100,000 flying hours. Next worst were the P-39 at 245, the P-40 at 188 and the P-38 at 139. Interesting but probably not significant is that all were Allison powered.

Bomber wrecks were fewer but more expensive. The B-17 and B-24 averaged 30 and 35 accidents per 100,000 flight hours, respectively - a horrific figure considering that from 1980 to 2000 the Air Force's major mishap rate was less than 2 accidents per 100,000 flight hours.

The B-29 was even worse at 40; the world's most sophisticated, most capable and most expensive bomber was too urgently needed to stand down for mere safety reasons. The AAF set a reasonably high standard for B-29 pilots, but the desired figures were seldom attained.

The original cadre of the 58th Bomb Wing was to have 400 hours of multi-engine time, but there were not enough experienced pilots to meet the criterion. Only 10 percent had overseas experience. Conversely, when a \$2.1 billion B-2 crashed in 2008, the Air Force initiated a two-month "safety pause" rather than declare a "stand down," let alone grounding.

The B-29 was no better for maintenance. Though the Wright R-3350 was known as a complicated, troublesome powerplant, no more than half the mechanics had previous experience with the Duplex Cyclone. But they made it work.

Navigators: perhaps the greatest unsung success story of AAF training was navigators. The Army graduated some 50,000 during the war. And many had never flown out of sight of land before leaving "Uncle Sugar" for a war zone. Yet the huge majority found their way across oceans and continents without getting lost or running out of fuel - a stirring tribute to the AAF's educational establishments.

Cadet to Colonel

It was possible for a flying cadet at the time of Pearl Harbor to finish the war with eagles on his shoulders. That was the circumstances of John D. Landers, a 21-year-old Texan, who was commissioned a second lieutenant on December 12, 1941. He joined his combat squadron with 209 hours total flight



North American P-51A under construction at Inglewood, Calif. (Library of Congress collection)

time, including 2½ in P-40s. He finished the war as a full colonel, commanding an 8th Air Force Group --- at age 24.

As the training pipeline filled up, however, those low

WWII MOST-PRODUCED COMBAT AIRCRAFT

Ilyushin IL-2 Sturmovik	36,183
Yakovlev Yak-1,-3,-7, -9	31,000+
Messerschmitt Bf-109	30,480
Focke-Wulf Fw-190	29,001
Supermarine Spitfire/Seafire	20,351
Convair B-24/PB4Y Liberator/Privateer	18,482
North American P-51 Mustang	15,875
Republic P-47 Thunderbolt	15,686
Junkers Ju-88	15,000
Hawker Hurricane	14,533
Curtiss P-40 Warhawk	13,738
Boeing B-17 Flying Fortress	12,731
Vought F4U Corsair	12,571
Grumman F6F Hellcat	12,275
Petyakov Pe-2	11,400
Lockheed P-38 Lightning	10,037
Mitsubishi A6M Zero	10,449
North American B-25 Mitchell	9,984
Lavochkin LaGG-5*	9,920
Grumman TBM Avenger	9,837
Bell P-39 Airacobra	9,584
Nakajima Ki-43 Oscar	5,919
DeHavilland Mosquito	7,780
Avro Lancaster	7,377
Heinkel He-111	6,508
Handley-Page Halifax	6,176
Messerschmitt Bf-110	6,150
Lavochkin LaGG-7	5,753
Boeing B-29 Superfortress	3,970
Short Stirling	2,383

*The LaGG-5 was produced with both water-cooled (top) and air-cooled (bottom) engines.

Sources: Rene Francillon, *Japanese Aircraft of the Pacific War*; Cajus Bekker, *The Luftwaffe Diaries*; Ray Wagner, *American Combat Planes*; Wikipedia.

figures became exceptions. By early 1944, the average AAF fighter pilot entering combat had logged at least 450 hours, usually including 250 hours in training. At the same time, many captains and first lieutenants claimed over 600 hours.

FACT

At its height in mid-1944, the Army Air Forces had 2.6 million people and nearly 80,000 aircraft of all types. Today the USAF employs 327,000 active personnel (plus 170,000 civilians) with 5,500 plus manned and perhaps 200 unmanned aircraft. These 2009 figures represent about 12 percent of the manpower and seven percent of the airplanes of the WWII peak.

SUMMATION

Whether there will ever be another war like that experienced in 1940-45 is doubtful, as fighters and bombers have given way to helicopters and remotely-controlled drones over Afghanistan and Iraq. But within living memory, men left the earth in 1,000-plane formations and fought major battles five miles high, leaving a legacy that remains timeless.

Planes of Fame – 100 Years of Naval Aviation Air Show



Left to Right (and continued on top of next page): *Two Curtiss P-40s, Douglas AD-5, two Grumman F8Fs, two Grumman F6Fs, Grumman FM-2 and Douglas SBD-5 prepare to launch as part of the air display. (All photos by Charles E. Stewart)*



The County of San Bernardino, Calif., Planes of Fame Air Show 2011 joins the nation in commemorating 100 years of United States Naval Aviation. It was held at Chino Airport on May 14 and 15.

The birth of naval aviation is generally pegged at May 8, 1911, which was the day that the Navy signed a contract to purchase aircraft. This happened just months after pilot Eugene Ely, working for Glenn Curtiss, and flying a Curtiss pusher biplane made the first takeoff from a ship, the *USS Pennsylvania* in San Francisco Bay. Curtiss immediately offered free training to any Navy pilot and chose North Island in San Diego Bay for that work.

Just 100 years and days after the Navy signed that first contract, the Chino Airport skies were filled with generations of Navy and other services airplanes. Some 40 aircraft participated in the 2011 show and many more were in close up static displays.

In addition, panel discussions with U.S. Navy veterans were moderated by Shawna Hoppes, great granddaughter of Gen. Jimmy Doolittle. Promising something for every age and interest, there was a vendor marketplace and delicious food and beverages. Even the Road Stoves gourmet food trucks, featured on the Food Network, were on the ramp.

Among the aircraft flown were the Grumman Wildcat, Hellcat and Avenger; the Douglas Dauntless and Skyraider, and the Vought Corsair.



ABOVE: *A rare flying Grumman J2F-6 Duck is put through its paces for the crowd.*

BELOW LEFT: *A wonderfully restored Lockheed PV-2 Harpoon "Attu Warrior," N7670C, performs a fly-by.*

BELOW RIGHT: *Boeing P-12E, 32-17, N3360G, painted as F4B-3, 8090, on static display.*





1.



2.



1. Grumman (General Motors) FM-2 Wildcat, BuNo. 86572, N86572, taxi out.

2. Grumman F6F-5 Hellcat, BuNo. 70222, N1078Z.

3. Grumman TBM-3U Avenger, BuNo. 53835, N3967A.

4. A rare, flyable Consolidated PB4Y-2 Privateer, BuNo. 66302, N2871G.

5. Grumman F7F-3P Tigercat, BuNo. 80390, NX700F.

6. Goodyear FG-1D Corsair, BuNo. 67070, N29VF.

7. Douglas AD-5 (A-1E) Skyraider, BuNo. 132683, N39147.

3.



7.



4.



6.



5.



New Members

It's been awhile since we acknowledged our new members. In part, because we have been playing catch up with the membership roster. We think we have finally achieved this and want to take this opportunity to welcome the following new members to the Society, even if it's been so long since you joined that it doesn't seem "new" anymore. Welcome, and we hope you find your membership intellectually stimulating.

David Salay

Key West, FL 33040-6407
Ints: WWII / Jet Age

David W Howard

Millbrae, CA 94030-1016
Ints: Commercial Airlines / Jet Age

Robert Berg

Westminster, CA 92683-4138
Ints: Navy / Early Aviation

Ian Gavaghan

Seeleys Bay, ON KOH 2NO
Canada
Ints: Commercial Airlines / Jet Age

Ian Gavaghan

Seeleys Bay, ON KOH 2NO
Canada

Jeff Coudayre

Huntington Beach, CA 92649-4554

John B Hyde

Alameda, CA 94502-7603

Wayne G Sayles

Gainesville, MO 65655-0911

Traci & Mike Farley

Phoenix, AZ 85045-2254
Gift from Laura Smith

Burton Colan, Lt. Col. USAF
(Ret.)

San Diego, CA 92128-2030

Luis Jimenez Aparacio

Culver City, CA 90230

C Vance Haynes Jr.
Regent Professor Emeritus

Emil W. Haury Building 30A
Tucson, AZ 85721-0030
Ints: Aviation

Dell & Virginia Zehm

Stillwater, MN 55082

Gale Verboncouer

Culver City, CA 90230
Ints: Aviation

James C Pettis

Santa Monica, CA 90401

Larry Fogg

Los Angeles, CA 90056-1316

Charles Rosenburg

Fountain Valley, CA 92708

Darnell Pocinich

Fullerton, CA 92831-
Ints: Military Aviation / USMC
Acft / Bldg Plastic Model Kits

Ted Williams

Rushville, NY 14544-
Ints: Golden Age / A/C
Development

Phillip Harvey

Redding, CA 96003-8262

John M Kraus

Cincinnati, OH 45245-4909

Tony Stinson

Ulladulla, NSW 2539
Australia
Ints: Early aviation / Golden Age / Jet Age / Navy

William G Allbright

Fort Worth, TX 76179
Ints: WWI & WWII/ USAF

George Baker

Huntington Beach, CA 92649
Ints: Military aviation / WWI & WWII

John S Clauss Jr.

Glendale, CA 91207-1565
Ints: WWII / Jet Age

Alexandre Bigey

El Segundo, CA 90245
Ints: Golden Age / General Aviation

Peter Bruemmer

Brunswick, OH 44212

Donald Gregory

Kansas City, MO 64151
Ints: USMC / Commercial Airlines

Ben Guttery

Fort Worth, TX 76110-1009
Ints: WWI / WWI & WWII in Texas / Texas Aviation

William Morris

Benbrook, TX 76116
Ints: WWI & WWII / Golden Age

National Air Race Project LLC

Orange Village, OH 44022-1329
Ints: National Air Races

Bob Petite

Leduc Alberta T9E 6T1
Canada
Ints: Helicopters

Robert Campbell

Living History Press

Uxbridge, MA 01569

David Doyle

Memphis, TN 38187
Ints: WWII / Jet Age

Robin MacRae Dunn

Annapolis, MD 21403-1943
Ints: Commercial transport a/c
/ Commercial a/c

Karl Schwarz

Koenigswinter NRW 53639
Germany
Ints: WWII / Jet Age

Allan Schanzle

Columbia, MD 21045
Ints: Golden Age

John Dekker

La Palma, CA 90623
Gift from Kase Dekker

Anthony Rhodes

Brooklyn, MS 39425
Ints: Jet Age / Navy

John I Geiman

Clyde, OH 43410
Ints: USAF / PAA Clippers /
Jet Age

Prof. Robert D. Boers
Prof v Giffenstr 14

The Netherlands
Ints: Commercial Airlines /
Golden Age

Pete Ettinger

Los Lunas, NM 87031

Dolores Johnson

Santa Barbara, CA 93109

Walter P Nelms Jr.

Sunnyvale, CA 94087-4904
Ints: Early aviation / WWI
& WWII / Golden Age /
Experimental & Research

The Farwell Family

Benton, PA 17814
Ints: Golden Age/ WWII

Monty Hittle

Benton, PA 17814
Ints: WWII

The Karschner Family

Benton, PA 17814
Ints: Golden Age / WWII

Larry Melton

Advance, NC 27006
Ints: WWII

Scott Marcotte

Lufkin, TX 75901
Ints: WWII

Andy Prawitz

St. Joseph, MO 64507-1817
Ints: WWI & II /Early Aviation/
Golden Age / USAF

Matthew Scherzi

Orange, CA 92863-4352
Ints: Early Aviation / WWI
& WWII/ Experimental &
Research

Thomas H Kozel

Pottstown, PA 19465

Sal Picataggio

Bay Shore, NY 11706
Ints: Golden Age / WWII / Jet
Age/ USAF /Navy / Marines /
Scale Modeling

Michael Frank

Westminster, CA 92683

Stephen Nemeth

Burnaby, BC V5G 1Y7
Canada

Gregory Pons

Avignon, 84000
France

Don Porter

Pacific Grove, CA 93950
Ints: Commercial and business
a/c 1940-1965 / personalities

Verna Reamy

Columbia, MD 21045

Darrel Whitcomb

Fairfax, VA 22032
Ints: Combat aviation /
Commercial Airlines

Henk Uitslag

Hengelo, 7551K-B
Netherlands
Ints: General Aviation / Jet Age

John D Ruley

Modesto, CA 95350
Ints: WWII / General Aviation

Jean-Michel Maurel

Bourges, Centre 18000
France
Ints: Navy / Jet Age

Gerry Bryce

Shelby Township, MI 48316
Ints: Golden Age: ATCs of 1930
/ Commercial Airlines

Robert Heywood

Dayton, OH 45414

Paul Freeman

Ashburn, VA 20148

Jeannene Brennan

Anaheim, CA 92804-3167
Commercial

Bruce Lerner

Westerville, OH 43081

Pat Smith

Broken Arrow, OK 74014

Gerold G Williams

Santa Ana, CA 92705-2519

Rene J. Francillon

Vallejo, CA 94591-8044
Gift from Tim Williams,
Pala DC-3 Flt

Bruce Doug Lindsay

Albuquerque, NM 87120-5545
Ints: Cold War

Byron M. Fox

Mill Valley, CA 94941

Anton Le Nobel

XG Sassenheim 2172
Netherlands

VAJ Prinsen

3513CS Utrecht
Netherlands
Howard Bialas
Clanton, AL 35045

Gary Dutra

Huntington Beach, CA 92647

Donald B. Orr

Huntington Beach, CA 92647
Ints: Flying, Warbirds, old
airplanes

Robert Carney

Waialua, HI 96791
Gift from Don Orr / L-19, DC-3,
Old airplanes

Ed V Kaston

Huntington Beach, CA 92647
Ints: F-86, F-100, DC-3, DC-4

Ronald H Brewington

Los Angeles, CA 90056
WWII / Navy / Tuskegee Airmen

William F Cologne

Long Beach, CA 90802

Kenneth P Hornby

South St. Paul, MN 55075-2205
Ints: Early Aviation to 1945 /
Civil & Military

Derek Jones

Fresno, CA 93726
Ints: Early Aviation/WWI/GA/
USAF/WWII/Glider WWII

Daniel Leveille

Ridgecrest, CA 93555

Roy Oberg

Rockford, MI 49341
Ints: Golden Age - early
company histories / early
aviation-ultra lights '20s &
'30s

PRESIDENT'S MESSAGE

As mentioned in my previous note, we are settling in to the new HQ office. We have even found time to host several speaking events including James Douglas who spoke about his father and the development of the DC-3. A number of additional speaking engagements are being planned.

The importance of our settling into the office is that through the dedication of Tom Butz and Leonard Burke we have finally gotten our membership records up-to-date. The only thing left is getting acknowledgement letters out to new members and catching up on *Journal* mailings that may have been missed due to the lag in membership processing we experienced. If you are missing a *Journal* from 2011, please be patient and give us and the post office a couple of weeks. If you are still missing a 2011 issue by September 1, let us know and we will give you a replacement.

I want to continue to reiterate our 2011 focus on recruiting members. Our aging membership puts the Society in a precarious position unless we continue to bring in new members. While we are doing a little better in this department, we need to do a LOT better. That is where you can help. The Society has traditionally relied on membership growth through word of mouth. In the past, this worked well when you were recruiting your friends. Now we need you to reach out to the younger generations. Consider giving a gift membership to a child, grandchild, niece or nephew. You never know when such a gift may stimulate an interest in aviation. Another idea is to donate a gift membership as a prize or raffle item to a club organization such as Junior CAP, Boy Scouts, EAA chapter, modeling club, etc. By doing such simple things, you can help the Society grow.

You don't have to be a Southern California resident to volunteer. Have a computer and MS Excel? Interested in cataloging images from the photo archives? Let us know. We currently have a number of members supporting this effort, but can use more. The side benefit is that you'll get to keep for your collection the digital images we send for identification.

And, don't be hesitant about contributing to the *Journal* and *FlightLine*. We are constantly looking for articles, even if they are nothing more than a small vignette about an aviation-related experience you had.

Donations are always welcome. We can add books and magazines to our collection and you are always welcome to visit us with questions or stories.

Bob Brockmeier
President

AAHS FLIGHTLINE Sign-Up Reminder

For those that want to be notified by email when the next issue of the *AAHS FLIGHTLINE* is posted, please register your email address online. You can do this by going to the AAHS website "home page." At the bottom of this Web page is a link and instructions that will allow you to register your email address. This is an "opt in" program. Only those that request notification will receive one. The AAHS will not use your email address registered here for any other purpose than to notify you of a *FLIGHTLINE* posting. You have control and may remove or change your email address at any time. Remember that the electronic version of the *AAHS FLIGHTLINE* is in color.

AAHS FLIGHTLINE

American Aviation Historical Society

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The *AAHS FLIGHTLINE* is a quarterly electronic publication of the American Aviation Historical Society and is a supplemental publication to the *AAHS Journal*. The *FLIGHTLINE* is principally a communication vehicle for the membership.

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Prelude to the Reno Air Races, Pylon Racing Seminar (PRS)

June 15-18, 2011 - The Reno National Championship Air Races will be held in mid-September. In June or July the organization holds a pilot training seminar (Pylon Racing Seminar, or PRS) for would-be racers. Pilots wanting to race must attend this seminar if they fall into any one of the following categories:

- Never raced at the Reno National Championship Air Races
- Raced in a different race class at the Reno National Championship Air Races
- Not raced in the same race class in Reno within the past three years

PRS is a pilot certification program, not an aircraft qualification period. Although it is recommended, a pilot need not fly the plane he or she will race. However, any aircraft used must be of the same class for which the certification is being sought.

All phases of the certification must be completed during the Pylon Racing Seminar for any pilot who has never raced at Reno.

While it is possible to forego the PRS and still race in September, it means that pilot qualifying must be done during the week of qualifying the planes just before the races. Available time for pilot certification could be compressed or even eliminated, so most pilots attend the PRS.

As a result, the PRS has become an event in itself, providing an opportunity for everyone to come together, visit with old friends, greet new faces and prepare for September's event.



ABOVE: Vought F4U-4, BuNo. 97359, prepares for touchdown following a practice flight at the PRS. (Photo by Charles E. Stewart)

BELOW: American Air Racing's Thunder Mustang "Blue Thunder II," N352BT, flown by John Parker prepares to get some practice laps. (Photo by Charles E. Stewart)



AAHS Website Update

Quite a bit of work has been going into the AAHS website with the focus on enhancing our ability to support aviation research. If you have not taken the time recently to explore the website, let us encourage you to do so. While only in the initial phases, it does provide insight into what is coming down the pike.

Photo Archives

The online photo archives database is the most up-to-date catalog of the contents of the AAHS photo archives. It currently has slightly more than 50,000 entries, having added almost 1,500 this quarter. We have also added over 1,500 images to the online collection.

When searching the catalog, if you find a picture of a camera next to the catalog number, that image has a thumbnail image that can be viewed online – simply click on the camera to see it.

Our objective is to eventually have all 150,000-plus images

in the archives cataloged and scanned, but it's going to take some time and effort to complete the project.

"RESEARCH" Tab

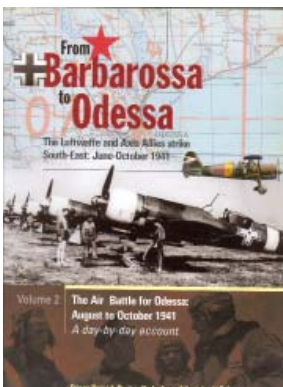
Navigating to the "RESEARCH" tab in the Members Only area will provide you with access to a number of resources. These include a searchable Golden Age Registration database, U.S. Navy Standard Aircraft Characteristics, 3-view drawings and original Lockheed 12 Engineering and Flight Test reports.

The Golden Age Registration database provides you the capability to look up individual aircraft, or generate a list of registrations for a particular model. The database covers from the early 1920s up to just prior to WWII.

If you have suggestions for enhancements or other material we should consider including, drop your AAHS webmaster a line (webmaster@aahs-online.org). We are very open to suggestions that will make the AAHS website a more valuable tool for our members.

Book Reviews

From Barbarossa to Odessa, The Luftwaffe and Axis Allies strike South-East: June-October 1941, Vol. 2: The Air Battle for Odessa: August to October 1941, A day-by-day account, Dénes Bernád, Dmitriy Karlenko and Jean-Louis Roba. Midland Publishing Distributed by Specialty Press. 2008, ISBN: 978-1-85780-280-1, softbound, 9" x 12," 96 pages, with 150 b&w and color photos and illustrations, \$29.95.



On June 22, 1941, Germany and its Axis partners attacked the Soviet Union along a 1,800 mile front, stretching from the Arctic to the Black Sea in operation Barbarossa. In late July, the second phase of the war on the Eastern front began. The Axis objective was to take the strategically important city of Odessa, the Soviet Navy's main Black Sea port. This book is a day-by-day air combat account of that campaign from August 1 to October 17, 1945, and includes both Axis and Soviet aircraft operations.

Germany and its Axis partners, the Romanians, Hungarians, Slovaks and Bulgarians, all took part in the attack and siege of Odessa. There was a wide range of aircraft types used by both sides as documented in this book – biplane and monoplane fighters, bombers and seaplanes - whatever they had was used.

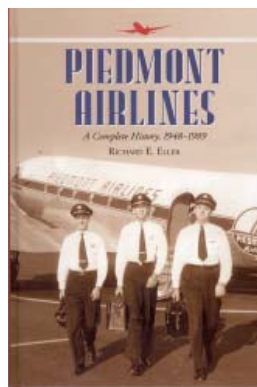
This book provides an in-depth look at one small portion of Germany's attack on the Soviet Union and the Soviet's early struggle for survival before the war in Europe evolved into WWII. It includes the Order of Battle for each of the opposing forces, the victories and losses, and an assessment of the conflict, as well as eyewitness accounts from pilots on both sides and is a wealth of information about this 78-day campaign.

The book is only 96 pages long and is obviously a second volume since the page numbering starts with page 99, but it does include an index for both volumes. The author's preference for detail and the small type font makes for difficult reading at times, but the very small printing on the 9" x 12" page format allows the publisher to cram a lot of information into each page. If you think this book will read something like the Battle of Britain, then guess again. It is, however, a historical account of what happened with just the facts and nothing but the facts, and for those interested in detailed accounts of a campaign, it is a book to have.

by Larry W. Bledsoe

Piedmont Airlines, A Complete History, 1948–1989; Richard E. Eller. McFarland & Co., Inc. 2008, ISBN: 978-0-7864-3147-2, hardbound with printed cover, 7" x 10." 317 pages, with 91 photos, appendices, notes, bibliography and index, \$49.95.

Piedmont Airlines was a little known regional airline based at Winston-Salem, North Carolina. Those who worked for Piedmont and those who flew on its planes believed that it was the one, if not the best, airline to fly.



In 1940, a young college graduate, Tom Davis, bought half-interest, well, 47 percent interest, in Camel City Flying Service, a fixed base operation on Miller Field (later Smith Reynolds Airport) in Winston-Salem, North Carolina. With hard work he successfully expanded its airplane dealership and spare parts operations into a regional sales and distribution network. When WWII came along Davis took advantage of the government's needs and became

an authorized repair facility for military aircraft and one of the government sponsored Civilian Pilot Training (CPT) program schools.

In 1948 Davis started Piedmont Airlines to serve smaller communities. Davis had three things going for him – his drive to know all about the business, his business acumen and his people skills. While his primary focus was on building the airline, he also took advantage of other opportunities such as providing pilots and crews for corporate aircraft as well as providing maintenance for those planes and for other regional carriers.

The following quote from the book is a good example of the *esprit de corps* that he generated. In 1968 flight attendant Lynn Sass said, "Everybody that was working for that company absolutely lived and breathed airplanes." The author goes on to say, "From conception to completion, the new (headquarters) facility revealed who the real stars at Piedmont were. They were the planes. Everyone else was just there to help them fly, including the company president."

Because of Tom Davis' vision and his employees' loyalty, the fledging airline managed to survive while many start ups after WWII floundered and failed. During the 1950s and 1960s they continued to make a profit and grow. Then came deregulation in the 1970s. At first they fought it, but when it became a reality, they again managed to survive while others failed. In the 1980s they continued to grow and that led to the end of the story. Their success and growth was perceived as a threat to larger airlines and USAir bought them out in 1989.

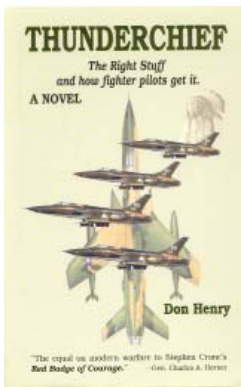
The author Richard E. Eller is a history professor at Catawba Valley Community College in Hickory, North Carolina.

This book is more than the history of a small regional airline that grew into a giant. It is also the story of people and how their leader's talent saw possibilities where others didn't. How he was able to instill those dreams and commitments in his employees who then make the airline successful while others floundered and failed. If you're interested in aviation history, this is an excellent book about a regional airline. If you're interested in how to make a company successful where others fail, then this book is a must read!

by Larry W. Bledsoe

Thunderchief; a novel by Don Henry. Pelican Publishing Co. 2004, ISBN: 978-1-58980-237-7, hardbound with dust jacket, 5.5" x 8.5," 296 pages, \$22.00.

The title comes from the F-105 Thunderchief, a single-seat fighter jet capable of Mach 2.2 in afterburner that could carry 12,000 pounds of armament in addition to its internal 20mm



Vulcan Cannon. The story is about the pilots who flew this fast, lethal weapon that played a key combat role during the Vietnam War. The author was himself an F-105 pilot with 129 missions over Laos and North Vietnam during the height of the Vietnam conflict.

The story is about a young F-105 pilot, Ashe Wilcox, the new guy in a squadron of veteran combat pilots and his struggle for acceptance. His mentor, Hunter, not Col. Hunter, not Hunter Sir, but just "Hunter," was a tortured POW

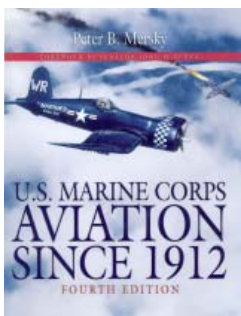
survivor from the Korean War who was obsessed with aerial-combat.

This is more than the story of F-105 pilots flying from bases in Thailand in 1966, although the book is filled with plenty of action. And, it reveals some of the questionable political calls from Washington that in effect helped the North Vietnamese by tying one hand behind the back of our fighting men. But the heart of the story is how Ashe Wilcox changed during his tour of duty, which the author has superbly succeeded in communicating. The subtitle of the book says it all, "The Right Stuff and how fighter pilots get it."

This reviewer found the book captivating and difficult to set down, one that you are sure to enjoy.

by Larry W. Bledsoe

U.S. Marine Corps Aviation since 1912, Fourth Edition; Peter B. Mersky. Naval Institute Press, www.usni.org. 2009, ISBN: 978-1-59114-516-5, hardbound with dust jacket, 8.5" x 11," 432 pages, 273 b&w photographs, Maps, Appendices, Notes, Index, \$49.95.



If you think Peter Mersky's fourth edition of USMC aviation history is just an update of what has happened since the third edition was published in 1997, think again. As the author

stated in the preface, "This is a new book, redesigned, refined, new information added to the existing publication and new chapters to cover Marine Corps aviation of the early twenty-first century."

The author starts with the Marine Corps' first aviator, 1st. Lt. Alfred A. Cunningham, who was sent to the Marine Barracks at the Philadelphia Navy Yard on May 22, 1912, the official birth date of Marine aviation. There was no one to train him, not even a plane to fly, and he was immediately sent on expeditionary duty. When he returned, the situation hadn't changed, so he gained permission to go to the Burgess Co., north of Boston that was building Wright Hydroplanes. After two and a half hours of instructions, he soloed on August 20, 1912. He was the Marine Corps' first aviator and was assigned Naval Aviator No. 5.

In reading the Corps' aviation story it becomes evident that they had to fight battles on two fronts. Militarily, the combat missions they were assigned to accomplish are well documented by the author. The second front was political — for funding, for the equipment they needed to complete their

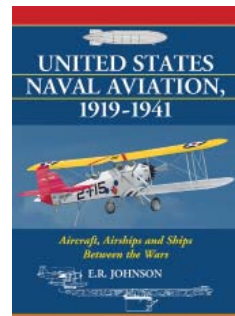
mission, and funding for their very existence. The snafus that Cunningham encountered at almost every turn in the beginning were a harbinger of the problems Marine Corps aviation would encounter for the next century.

Of particular interest was the author's description of Marine Corps aviation during the 1920s and 1930s. He provided details of the Corps' involvement in Central America during that period, which, to this reviewer, were lacking. Also my having personally met Boyington, Marion Carl, Ken Walsh, and other Marine aces made the author's chapters on WWII even more meaningful. The author put into perspective the role Marine pilots played in the Pacific and their accomplishments. It was also interesting to see the big picture of Marine aviation in the 1960s when this reviewer served at El Toro MCAS during the Cuban Missile Crisis and the early days of the Vietnam War.

As Mersky documents, Marine Corps aviation has proven its worth time and again as an effective fighting force in WWII, Korea, Vietnam, Operation Desert Storm and the continuing war against terrorism. In his final chapter the author documents that Marine Corps aviation is still going strong and their plans for the future hold the promise that it will continue so. Marine Corps aviation can be proud of having served nearly 100 years with distinction around the world and having survived the political funding battles that have threatened its existence. This book is one every aviation enthusiast and every Marine Corps aficionado will want in their libraries.

by Larry W. Bledsoe

United States Naval Aviation, 1919-1941, Aircraft, Airships and Ships between the Wars; E.R. Johnson. McFarland & Co., Inc. 2011, ISBN: 0786445505, paperback, 338 pages, 40 color profiles, numerous drawings, \$45.00.



Whether you have been a student of U.S. Naval Aviation for 70 years, 30 years or just starting out on this interesting journey, this book should definitely be in your library.

The quality of the text, photos and AAHS member Lloyd S. Jones' four-view drawings are excellent. The introduction is concise and intellectually informative. The years 1919 through 1941 were vitally important to U.S. Naval Aviation. During the course of these two decades, the U.S. Navy literally invented aircraft carrier operations. It was given a blank slate and through years of trial and error, the foundation was laid that culminated in the successes of WWII.

Naval leadership during this time period proved their worth. There were many important men, each building and shaping this new force of warfare. Because of his many innovations in day-to-day carrier operations as well as the tactical role carriers would play within the Battle Fleet, Vice Adm. Joseph M. Reeves led the pack.

This book presents a summary of 190 aircraft that traversed the two decades between the two world wars. The majority of these naval aircraft are accompanied by Lloyd S. Jones' four-views beginning with the DH-4B and ending with the Schweizer LNS-1.

Book Reviews (continued on page 12)

Mr. Jones' 40 color profiles provide a glimpse of the colorful paint schemes in use at the time. There is an interesting section on lighter-than-air, both rigid and blimps. Sixteen line drawings by Mr. Jones are presented.

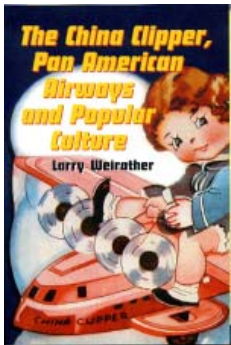
For those interested in aviation ship development, this book provides it. There are eight line drawings included. Racing and experimental aircraft sponsored by the U.S. Navy are covered as well as foreign aircraft and airships. A complete listing of U.S. naval aircraft, airship and unit designations, nomenclatures and abbreviations are listed. The status of naval aircraft as of December 1941 by make and model shows how much we didn't have at the time.

This book provides a glossary of naval and aeronautical terms for the time period. A bibliography is provided as well as an eight-page detailed index vital to any serious book.

This work sets the tone for the subject and belongs on your bookshelf next to the fine expert works of Bill Larkins, Pete Bowers, John Elliott and Barret Tillman.

by Thomas E. Doll

The China Clipper, Pan American Airways and Popular Culture; Larry Weirather. McFarland & Co., 2006. ISBN-10: 0786428201, 8.9 x 6 inches, paperback, 316 pages, \$35.00.



The Clipper aircraft, synonymous today for nostalgic travel to far-off lands, along with Pan American Airways, did much to forge a new American self-image during the 1930s and 1940s, according to author Larry Weirather.

Weirather assembles an enormous amount of information on how the

Clippers, with Pan Am, permeated popular culture to such an extent that 'Pan Am and their famous flying boats were used for everything from selling flour, promoting youth organizations, glamorizing cooking dishes, educating military pilots in seaplane maneuvers and helping an isolationist nation into a leadership position.'

The chapters cover such diverse elements as 'Clipper Toys and Amusements,' 'The Clipper and Agriculture' and 'Clippers go to the Movies,' in addition to an introductory chapter that talks in detail about how Pan American advertising successfully represented the Clipper as the paragon of U.S. interests, values and beliefs. Little known snippets of Clipper information abound through the book, such as the use of the Clipper to supply top secret military bases during wartime, while Pan Am advertising boldly illustrated the Clippers' 'secret' flight path on the back of all its travel brochures!

Several pages of pictures are included, not only of the aircraft, but posters, toys and other merchandise using the iconic Clipper. A bibliography is also included, for those researchers who seek additional information.

Lots of information, (ok, TONS) – for the Clipper enthusiast or serious researcher, and perhaps more interesting, a view of U.S. attitudes and beliefs and how they were influenced by the technology and the marketing savvy of Pan Am Airways.

by Jerri Bergen

One Hundred Years of U.S. Navy Air Power, edited by Douglas V. Smith. Naval Institute Press, www.nip.org, 291 Wood Road, Annapolis, MD 21402. 2010, ISBN 978-1-59114-795-4. Hardbound, 9.25"x6.25," 392 pages, photographs, index, \$52.95 plus S&H.



2011 marks the centennial of U.S. naval aviation; as a result we are seeing a proliferation of books celebrating this milestone. This book needs to be added to the list of those read by historians of U.S. Naval Aviation. Smith's edited

edition is highlighted by sections written by such noteworthy historians as Douglas Smith, Edward Miller, Norman Friedman, Hill Goodspeed and others.

Trying to chronicle one hundred years of naval aviation in a single volume is a daunting task even for such a list of accomplished scholars. The group of authors chose to not take a chronological approach to the history of naval aviation, but to look at the major themes of naval aviation. Themes such as flying boats, the Two-Ocean Navy Act, Carrier Evolution, the transition to jets, dominate this book. This approach allows readers to read each chapter independent of others. If the readers are looking for a chronological narrative of American Naval Aviation they will need to look elsewhere, but if they are looking for a solidly researched study of the challenges of American naval aviation this is a good introductory text. Not only is the text well-written, but it is well-documented, making it easy for readers to know where to go for more information.

While this book is about the development of American naval aviation, it is not to be confused with a book that chronicles the development of aircraft or a battle history. The book chronicles the challenges of demonstrating the need for naval aviation; and the struggles naval aviators faced within the Navy and within the Defense establishment. The study begins with Eugene Ely flying his Curtiss pusher off a temporary platform built on a cruiser, and concludes with the President of the United States asking, "Where are our aircraft carriers?" The process by which the transition develops is chronicled in the book by highlighting the struggles for naval aviation; particularly during the inter-war period and the challenging issue of determining the role of naval aviation in the years following WWII when aircraft were changing dramatically. There is a chapter that examines an often overlooked aspect of naval aviation; Helicopters. The first helicopters used by the U.S. Navy were the same as those used by the other services. Beginning in 1960, helicopters that entered service were in response to designs specific to Navy requirements.

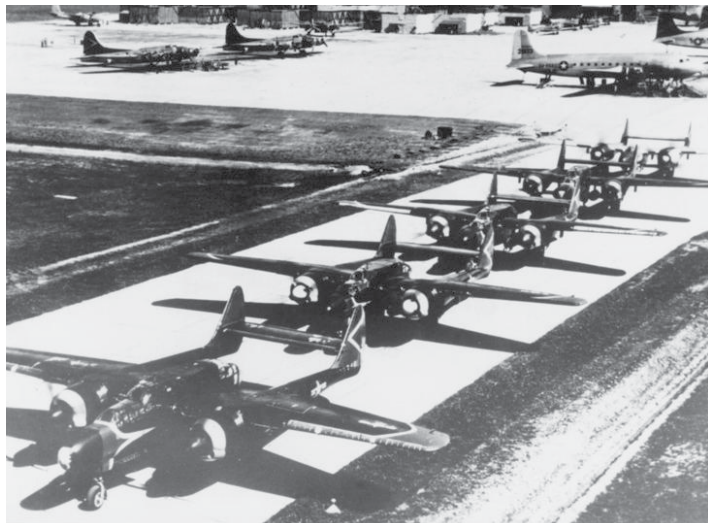
Douglas Smith in his conclusion makes the point that today a single carrier represents considerable sustainable firepower without having to worry about a land base of operations. This ability is becoming more valuable as we enter the second century of naval aviation. As this century opens, U.S. aircraft carriers are spread across the globe, and when something comes up, the President of the United States surely asks, "Where are our aircraft carriers?" This excellent volume shows how carrier aviation grew from fighting for the smallest of budgets, to one of the most influential aspects of American military airpower.

by Christopher S. Trobridge

Wants & Disposals

Wanted: I am looking for a *quality* copy of the P-61 line-up of the photo shown. I have been looking for it for years but all I come up with is a poor print or a disastrous and totally useless 72 dpi Internet copy. For my Northrop project I would appreciate the loan of a well defined and processed copy to scan, or a 600 dpi scan of a good print.

Any help would be appreciated.



Gerald Balzer
3615 E. Churchill St.
Springfield, MO 65809
(417) 869-9488
gbalzer626@sbcglobal.net

Wanted: I am interested in anything related to William Bushnell Stout and his many aviation projects. In particular I am interested in magazine articles, books, photographs, and ephemera. Please let me know if you come across anything regarding the following:

The Buckley Monoplane	Buckley Wichcraft
Stout Skycar	Convair 103
George Spratt	Stanley Knauss
Stout Airlines	Ford Trimotor
Prudden Trimotor	George Prudden
Stout Batwing	Stout 2AT
Stout Air Pullman	Stout Safety Plane
World War I Aircraft Board	Stout Bushmaster
Hayden Aviation	Scenic Airlines
Stout's work with Packard	

Jim Stout
jimstoutwisconsin@yahoo.com

Information Wanted: I came across a Curtiss Wright Electric Propeller Div. propeller blade approximately 8-9 ft long. The only useful info is "DWG. No. 1052.13c4.30.

Can the aircraft or aircraft engine be identified?

John Maene
f100c783@aol.com

Promote Your Society

There are any number of creative ways that you can promote the Society. Earl See recently participated in the Lake Forest, Calif., Independence Day parade with his classic car. On the doors were signs promoting the AAHS. The parade was videotaped and played several times on a local cable channel. The voiceover on the video stated, "This entry is sponsored by the American Aviation Historical Society, a non-profit organization dedicated to the preservation and dissemination of the rich heritage of American aviation."

The car, for you car buffs, is a 1958 Mercedes-Benz 190 sedan own by Mr. See for the last 50 years. The car was previously owned by the late songwriter, Jack Norworth, who wrote "Take Me Out to the Ball Game" and "Shine on Harvest Moon." The car is in original (unrestored) condition and has only 80,000 miles on the odometer. It has won numerous awards in competition.

If you need support for signage for an event, contact headquarters with your request. We'll put something together for you. Be sure to allow enough lead time so that we can respond.





American Aviation Historical Society

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Please enroll me as a member of the AAHS. Enclosed is my check (money order or bank draft) for dues as checked below. I understand that I will receive all issues of the *AAHS Journal* published to date during my membership year, plus all issues of the *AAHS FLIGHTLINE* (Downloadable from the AAHS website). Individuals joining after October 1, will have their membership begin the following year, but will receive the Winter issue of the *Journal* as a bonus. I also understand that renewal is due at the end of the calendar year in which membership will expire. (Valid through 2011)

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NEW MEMBER DRIVE

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

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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?

Pass them a copy of the Membership Application above and encourage them to join!

If each member enlists one new member, we would double our membership. Then we will be able to reduce membership rates - tangible "payback" for your efforts to help expand the Society's membership.

Make it a commitment to **recruit one new** AAHS member this year!

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MOVING???

Make sure you send the AAHS office a change of address so you will not miss any issues of your Journals.

Minimizing Murphy's Laws

Murphy's Law and its corollaries basically boil down to: "If things can go wrong, they will."

In the 1960s, when I was teaching ballistic missile crews the systems engineering of their beasts, I used to show a documentary in which a road was rated as having all overpasses higher than the rated minimum height. But one such overpass was in the middle of a place where the road came sharply down a slope, went flat under the overpass for about 30 feet, and went up the other steep slope. It was a railroad overpass.

The missile in the movie would have been a Convair SM-65C, one of three versions that were used for flight tests and were never operational. The SM-65C with no nose cone would have been 70-76 feet long and would overhang the transporter (see photo). The funny shaped black "cut off rectangle" just in front of the rear wheels is the driver's cab that I have heard was pretty bad -- never been in one so that is rumor.

The missile trailer and missile were so long that when traversing this railroad overpass with the front and rear tires on the ground, placed the middle of the missile about 3 or 4 feet higher than advertised. This left less than two or three inches of clearance, and that was with the springs of the trailer hydraulically compressed and all the air out of all tires. The close-up shots of them inching the big beast through were breathtaking.

They had cleared it by a few feet, when a train came roaring down the track and the old trestle, under the weight of the train, dropped down a foot or two. When I showed it the new crews were sure it was a comedy. If I played it straight and serious they would tell the CO negative things about me. So I began treating it as the Keystone Kops farce it appeared to be.

One day a Lt. Col. student got up angrily, came to the front of the room, and placed his face within inches of mine. "Ever seen me before, lieutenant?" he shouted angrily.

"No, Sir."

"Look closely at that film -- I was the commander of that !@#%&^*() convoy AND THAT WAS NO COMEDY!"

SO, DO NOT TRUST A MAP IN CASES LIKE THIS -- SURVEY THE ROUTE. The New England Air Museum and Connecticut Aeronautical Historical Association experienced similar problems when moving a disassembled B-29A from Maryland to Connecticut by road.


True story. For the more nit-picking historians among us, it was an early-model Atlas ICBM with no warhead aboard.

H. Larry Elman, Colonel, USAF (Ret.)
AAHS Member since the very early 1960s



Want to help your Society?

How about reviewing a book? Just let Kase Dekker (kasedekker@aol.com) know and he'll send you a book. The only catch is that you have to write a short book review (format like the one above) and send it back to us. Kase will let you know what titles are available.



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* California residents; add 8.75 percent (\$1.13) state sales tax.

AAHS Photo Archive CDs Series

The Society has recently started development of a series of photo CDs. These CDs contain high-resolution scans of negative, slides and prints from the AAHS Image Library. The resolution of these scanned images is sufficient to make an 8"x10" photographic quality print. Each CD focuses on a particular aspect of American aviation history - be that a particular manufacturer, type or class of aircraft.

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

- 1001 Douglas Propeller-Driven Commercial Transports
- 1006 Lockheed Constellations, Part I
- 1007 Lockheed Connies in Color
- 1009 Lockheed P-38/F-5
- 1011 Curtiss Transports
- 1021 Boeing Propeller-Driven Commercial Transports
- 1031 Golden Age Commercial Flying Boats



These CDs are available to members for a donation of \$19.95 (\$29.95 non-members) each plus shipping (\$2.50 U.S., \$5.00 International - add \$1.00 for each additional CD). Donation 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, Connies in Color, XP-56, Northrop X-4, Bell Aircraft, and Early Lockheeds.

AAHS Print Service

The AAHS Print Service allows members to obtain photographs from the AAHS collection to support individual research projects and to expand personal collections. Images are made from negatives, slides or scans of high quality prints contained in the AAHS collection.

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