



Martin Mars Airtankers

By Aad van der Voet

Fighting forest fires in remote areas is not easy, and requires special equipment. Enter the gigantic Martin Mars, the largest operational flying boat in the world, and today's ultimate combination of airtanker and float plane.

Regular airtankers need a base with a runway to reload after their drop runs. For British Columbia this is a bit of a problem because it does not have that many airstrips. However, it does have lots of lakes and an impressive coastline with many bays and inlets. This makes it ideal territory for a large flying boat airtanker. All it needs for reloading is a strip of open water about two miles long. That is why two 62-year-old Martin Mars flying boats have been very successful in fighting forest fires in western Canada for 45 years.

A Bit of Mars History

On August 23, 1938, the U.S. Navy placed an order with the Glenn L. Martin Aircraft Company for one XPB2M-1 patrol bomber, which would become the Navy's largest flying boat. The prototype, BuNo 1520 and



It's not often one has the opportunity to see a Martin Mars in action, but in October 2007, "Hawaii Mars" briefly operated from Lake Elsinore in southern California during the massive wildfires that hit this region. The photo essay accompanying this article was contributed by Brian Lockett, AAHS member and director of the Goletta Air Museum. To heat up the supply of engine oil, Hawaii Mars made a few high-speed taxi runs, kicking up a lot of spray as the sun made a brief appearance through the clouds.

nick-named "Old Lady," was launched into Dark Head Creek at Martin's factory in Middle River, Md., (near Baltimore) on November 5, 1941. The most striking difference between this prototype and the later production versions is that it was a twin-tail design.

One month later disaster struck, when during taxi tests on December 5, 1941, the propeller of the #3 engine threw a blade, which severely damaged the fuselage and caused a fire in engine #3. This fire destroyed the engine, engine mount and part of the starboard wing. The repairs, as well as further tests and improvements, caused considerable delay, and 'Old Lady' finally made its first flight on July 3, 1942, much later than originally planned.

Testing was concluded in November 1942, but by that time the war situation in the Atlantic and the Pacific had changed considerably. There was no more need for a slow

patrol bomber, and the U.S. Navy decided to have the prototype converted from a patrol bomber to a transport aircraft. This meant the removal of its gun turrets, fuselage and wing bomb bays, armored plating and other offensive provisions. Instead, the aircraft received additional cargo hatches and cargo loading equipment, existing hatches were enlarged and the decking was reinforced. It was now redesignated as a XPB2M-1R, to signify its new transport role.

Further tests followed, and on November 27, 1943, the giant transport aircraft was officially delivered to the U.S. Navy. It first flew with the newly formed VR-8 from Patuxent River, Md., for crew training and was later transferred to VR-2 at NAS Alameda, Calif. It was mainly used on the Pacific routes between California and Hawaii, where it built an impressive service record.

Satisfied with its performance as a transport aircraft, the U.S. Navy

Highlights of What's Inside:

- Martin Mars Airtankers
- eNewsletter Reminder

Regular Sections

- Book Reviews
- Wants & Disposals
- Photo Archive Report
- President's Message
- New Members
- Folded Wings



The wingspan of the Martin Mars is 200 feet. That's longer than the wing of a classic 747. Its wing area is 3,683 square feet. It is the largest airworthy airplane powered by reciprocating engines.

ordered 20 production aircraft. This production version, designated the JRM-1, differed from the prototype in being a single-tail design, having a longer hull with fewer bulkheads and a larger maximum takeoff weight. It also had been fitted with equipment for overhead cargo handling and was powered by four Wright R-3350-24WA *Cyclone* engines.

By the time the first JRM-1 *Mars*, BuNo 76819 "Hawaii Mars," was delivered on July 27, 1945, WWII was almost over, and the Navy cut down its order from 20 to only six aircraft. The last of these was delivered as a JRM-2, equipped with the more powerful Pratt & Whitney R-4360 *Wasp Major* engines. This allowed it to carry even more weight on the flights between California and Hawaii. The Navy was very pleased with its performance, and decided to have the four remaining JRM-1's (one had been destroyed in a landing accident) re-engined with the *Wasp Majors*. These four aircraft were then redesignated to JRM-3.

The U.S. Navy lost a second *Mars* in 1950, but continued to operate its remaining JRM-2 and three JRM-3s until 1956. The last flight took place on August 22, 1956, and all four aircraft were beached at NAS Alameda near San Francisco, Calif.

Forest Industries Flying Tankers (FIFT)

During the mid and late 1950s, a number of large forest fires plagued western Canada and destroyed many acres of forest. In an effort to combat such fires in remote areas, several of Canada's major lumber corporations, among them MacMillan Bloedel Ltd., TimberWest Forest Corp. and Pacific Forest Product Ltd., decided to join forces and formed Forest Industries Flying Tankers (FIFT). Given British Columbia's geography and lack of suitable airstrips, Dan McIvor, a Canadian airtanker pioneer and senior pilot with MacMillan Bloedel Ltd., wanted to convert large flying boats into water bombers.

In 1959, the U.S. Navy put the four Martin *Mars* flying boats up for auction. McIvor was informed about this, but he was too late and found the auction had already closed. The winning bid was from Hugo Forrester, trading as the Mars Metals Company, who bought all four aircraft for scrapping, for a total sum of only \$23,650. McIvor contacted Forrester, whom he found willing to sell the four aircraft for \$25,000 each. With some effort, McIvor was able to convince his superiors of the airtanker potential of these large flying boats, and the deal was made. FIFT now owned four Martin *Mars* flying boats.

Just a few inches of air under the keel of Hawaii Mars as it flares for landing on the lake.





The number three engine coughs a puff of smoke as it starts up while the Hawaii Mars taxis out for a fire-fighting mission.



The Hawaii Mars makes a pass over the lake.

McIvor also had the foresight to immediately start a hunt for spare parts for the flying boats. He bought six spare engines for \$135 each, later followed by 29 more R-3350s from a scrap dealer for \$600 each. He also discovered the U.S. Navy still owned many crates of factory-new spare parts, which he was able to buy for only \$3,200. These purchases enabled FIFT and its successor Flying Tankers Inc., TimberWest and Coulson to operate the *Mars* flying boats well into the 21st century.

Dan McIvor remained the driving force behind the entire operation of getting the aircraft into service with FIFT and developing the correct and most efficient operating procedures. They were converted to airtankers during the early 1960s by Fairey Aviation of Canada at Victoria International Airport (Patricia Bay), Sidney, B.C. This conversion involved the removal of all unnecessary military and cargo-loading gear, the re-installation of the original Wright R-3350 *Cyclone* engines of the JRM-2, and the installation of large water tanks and a sophisticated retractable scooping system.

In the early years of the operation, two of the four aircraft were lost, one in a crash in 1961 which took the lives of all four crew members, and the other was damaged beyond repair during a storm in 1962. Although these were

serious setbacks, they did not deter the people of FIFT. They pressed on with their plans, and the fourth and last *Mars* was converted to airtanker and put into operation in 1964. No other serious accident has occurred since that time.

Operation

There are a few noteworthy differences between the two remaining aircraft (“Philippine Mars” and “Hawaii Mars”). During the airtanker conversion in the 1960s, Philippine Mars water tanks were installed inside the main fuselage, where the cargo used to be stowed. Hawaii Mars, however, had them installed in the bottom of the fuselage, where fuel tanks used to be. This also mandated a difference in the dropping mechanisms: Philippine Mars drops its load from two outlets on either side of the fuselage, while Hawaii Mars drops more like a conventional airtanker from its belly.

The removal of fuel tanks from Hawaii Mars in favor of water tanks means that it has a reduced fuel capacity compared to the Philippine Mars. While Hawaii Mars can take 6,485 gallons of fuel, Philippine Mars can take on twice as much, 13,200 gallons.

Despite these differences, both aircraft carry the same amount of water, 7,200 gallons. This water can optionally be mixed with foam concentrate from a tank with a capacity of

Hawaii Mars can scoop up 7,200 gallons of water in less than half a minute. That's over 55,000 pounds.



600 gallons, which increases the effectiveness of a water drop by about 30 percent.

The aircraft are flown by a crew of four comprised of a captain, first officer, and two flight engineers. The captain and first officer fly the aircraft, and the flight engineers take care of the loading and dropping operations.

When a *Mars* needs to fill its water tanks, a normal landing procedure is executed. Once on the water, the captain allows the speed to drop to about 70 knots, while keeping the aircraft “on the step” (the ledge on the lower fuselage, used to break the water suction). One of the flight engineers then takes control of the engine power, and the two scoops are lowered into the water. These scoops are essentially two forward-facing pipes with a diameter of seven inches.

The aircraft is now taking on water at a rate of about 265 gallons per second, and it takes only about 25 seconds to completely fill the tanks. During this time, the increasing weight of the aircraft requires the flight engineer to slowly increase engine power to maintain an airspeed around 65 knots. When the tanks are full, the scoops are raised and the captain performs a normal loaded takeoff.

Obviously the *Mars* can reload much faster than a land-based plane. In fact, when operating in British Columbia with suitable lakes or bays nearby, it can on average drop a full load on the fire every 15 minutes, and it can make 20 consecutive drops before the foam concentrate tanks are empty. No other airtanker even comes close.

Today

So, out of the seven built, only two of these giant machines now remain. They soldiered on, and were still in use in 2007, after 45 years of fire fighting duties. During the fire season, you can usually find them floating peacefully on Sproat Lake near Port Alberni on Vancouver Island. They

are today’s ultimate airtankers for water-rich areas, until recently under the care of Flying Tankers Inc. (renamed from Forest Industries Flying Tankers Inc. in 2001). This company became a wholly-owned subsidiary of TimberWest Forest Corp., after the other corporations dropped out of FIFT years ago.

But at the end of 2006 there were signs of change. On November 10, 2006, TimberWest issued a press-release, in which they offered their Martin *Mars* water bombers for sale. Among the interested parties were the Glenn L. Martin Maryland Aviation Museum (in cooperation with the British Columbia Aviation Council) and the Coulson Group of Companies.

On April 13, 2007, TimberWest Forest Corp. announced it had reached an agreement to sell both Martin *Mars* flying boats to the Coulson Group of Companies, which is also a Vancouver Island-based lumber corporation. More specifically, the aircraft were sold to the Coulson Group’s aerial division, Coulson Aircrane Ltd. Coulson Aircrane is a helicopter operator, specializing in aerial firefighting and heli-logging, and is based at Port Alberni Airport, just north of TimberWest’s base at Sproat Lake.

The sale, which took effect on May 1, 2007, included several spare engines and many other spare parts, as well as specialized equipment. The TimberWest facilities at Sproat Lake were also included in the deal. Part of the purchase agreement is that upon retirement of the aircraft, one Martin *Mars* will be made available to the Port Alberni community for preservation.

To aviation enthusiasts all this was very good news. It meant that the two *Mars* flying boats will be kept operational as water bombers, and that they will remain based at Sproat Lake. In effect it seems that, for now, nothing much will change.

Martin Mars Production List

BuNo.	C/N	Del date	Name	Remarks
1520	877	27/Nov/1943	Old Lady	Final assignment to NATC Patuxent River, Md., as a maintenance trainer in 1949. Later broken up, presumably at Patuxent River.
76819	9263	27/Jul/1945	Hawaii Mars	Sank in landing accident in Chesapeake Bay, August 5, 1945.
76820	9264	26/Jun/1946	Philippine Mars	Currently operated by Coulson Flying Tankers. Registered C-FLYK
76821	9265	28/Feb/1946	Marianas Mars	Crashed into Mount Mariarty during drop run, killing four crew members on June 23, 1961. Registered as CF-LYJ at the time.
76822	9266	Feb/1946	Marshall Mars	Lost April 5, 1950, to fire and subsequent explosion following force landing in Ke’ehi Lagoon, Ohau, Hawaii.
76823	9267	23/Apr/1946	Hawaii Mars	Currently operated by Coulson Flying Tankers. Registered C-FLYL
76824	9268	10/May/1948	Caroline Mars	Lost October 12, 1962, during Hurricane Frieda when it snapped its tie-down lines and was blown into a highway shoulder at Victoria International Airport. Written off and salvaged for spares. Registered CF-LYM at the time.

The full histories for all seven aircraft are available at: http://www.oldwings.nl/content/mars/mars_a.htm

PRESIDENT'S MESSAGE

I hope this *Newsletter* finds all of you optimistic for 2008. We at the Society are looking forward to several items that should enhance our stature in the aviation community and provide you, the members, with additional resources for your interest.

We are in the process of obtaining a grant to digitize our photo library. If all goes according to plan we will start the catalog process with our oldest items of interest. We are also most appreciative of the photos and negatives you have sent us. If any of you have interest in assisting us please drop us a line, or send me an e-mail at bnbbrock@yahoo.com.

If you happen to reside in the LAX-Orange County area and would like to assist us, particularly in the evening, let us know, and we will make an attempt to revise our hours.

As you know, the process of delivering the *Journal* and the *Newsletter* involves the input from many sources. The often overlooked individuals are our proof readers, Earl See and Job Conger. Both do a superlative job. Their task is made easier because both are a dedicated aviation enthusiast. Thank you Earl and Job for a super job.

To our members, thank you for your generous donations. We appreciate your generosity, and will use some of the funds for the photo library digitization process.

Bob Brockmeierer, President

EMAIL ADDRESS CHANGE

Effective Immediately, the Society's
email address is now:

aahs2333@sbcglobal.net

AAHS NEWSLETTER

American Aviation Historical Society

President:

Robert Brockmeierer

Vice President & Chief Publication Officer:

Albert Hansen

Managing & Newsletter Editor:

Hayden Hamilton

The AAHS *Newsletter* is a quarterly publication of the American Aviation Historical Society and is a supplement publication to the AAHS *Journal*. The *Newsletter*, which is published mid-span to the AAHS *Journal* schedule, is principally a communication vehicle for the membership.

Business Office: 2333 Otis Street
Santa Ana, CA 92704-3864, USA

Phone: (714) 549-4818 (Wednesday only)

Web site: <http://www.aahs-online.org>

Email: **aahs2333@sbcglobal.net**

Copyright (c)2008, AAHS

AAHS eNewsletter Sign-Up Reminder

For those members that want to be notified by email when the next issue of the *AAHS Newsletter* is posted, please register your email address on-line. You can do this by going to the "Members Only" area of the AAHS Web site and then selecting "Newsletters." 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 members 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 *Newsletter* posting. You have control and may remove or change your email address at any time.

Remember that the electronic version of the *AAHS Newsletter* is in color. This adds an additional depth and richness to the photographs published here.

AAHS-ONLINE.org Web Site

Access to the Members Area of the AAHS Web site ***requires*** a username and password to access. They are:

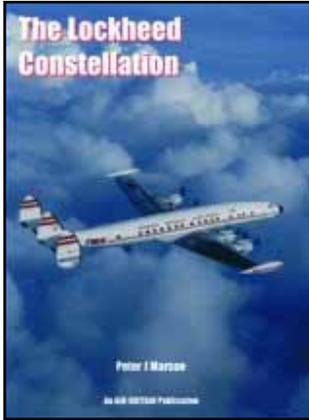
Username: AAHS

(use capital letters only)

Password: 23330TIS

(no spaces, all capital letters and Alpha "O" not Zero)

Book Reviews



The Lockheed Constellation, Peter J. Marson. Air-Britain (Historians), Ltd., 41 Penshurst Road, Leigh, Tonbridge, Kent, TN11 8HL UK (May 2007), 592 pages, 2 volumes, hard-bound, 8.5x12 in., glossy paper, 100 color photos, 500+ B&W photos, 70 color line drawings by Michael Zoeller, ISBN 0851303668. Price for non-Air-Britain member £44.95 member £29.95

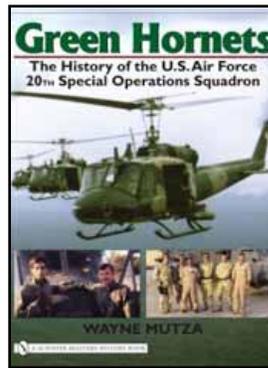
plus s&h.

Those fortunate enough to have seen the Lockheed *Constellation* in flight will likely agree that there are few airplanes that can match its grace and beauty. A book matching the *Constellation's* beauty and uniqueness has now been published by historian Peter J. Marson and Air-Britain, both long recognized for their high-quality publications.

Are high-quality color and black-and-white photos your special interest? How about 600+ of them, many not published before and wonderfully reproduced on quality glossy paper with interesting detailed captions. Are you a modeler or airline enthusiast? Michael Zoeller has created 70 color line drawings that include a fascinating variety of color schemes worn by *Constellations* and the appendix includes detailed descriptions of the airline paint schemes. Ever wondered what it would be like to pilot *Constellations*? Peter takes you on flights with various models including an EC-121 over the Gulf of Tonkin in 1968. Want to check a specific *Constellation* that you have seen, photographed, or flown in (lucky you)? A 130 page production history provides a detailed history of each of the 856 *Connies* produced. Details of each military unit assignment, upgrades and modifications, civilian owners, and accident details. For example, Pan Am 749 N86530 enroute LaGuardia to London hit by a Cessna 140 just aft of the flight deck tearing a 15ft hole in the roof and not surprisingly, Peter includes a photo of the damaged plane on the same page.

There are sections detailing all of the *Constellation* civil and military operators, the conversions, the variants, record flights, names worn, films they appeared in, and stamps that featured them. There is also advertising material, timetables, and other military and airline memorabilia. A foreign and U.S. registration/constructor's number cross-reference index is included. I can't imagine an aviation enthusiast being disappointed with this book. Highly recommended.

Bob Parmerter



Green Hornets, The History of the U.S. Air Force 20th Special Operations Squadron, by Wayne Mutza, Schiffer Publishing Ltd., ISBN: 978-0-7643-2779-7, Hardcover, 134 pages, 11.5 x 8.75 in. Many color and B&W pictures and illustrations, including 51 pages in color, Appendix, Index, Bibliography, \$35.00, available at www.schifferbooks.com.

This book is a unit history of the "Green Hornets." This U.S. Air Force Squadron is unique among Air Force units, and can claim to be the first to operate helicopters. The story of the men and machines starts in 1942 with early activation as the 20th Observation Squadron (light) at Savannah Army Air Field near Savannah, Ga.

After undergoing many activations and deactivations, they finally became the 20th Helicopter Squadron in July 1956. In 1965, it was the first Air Force unit to be deployed to South Vietnam. The mission was support for U.S. Army Special Forces in South East Asia, and the unit designation was changed once again to the 20th Special Operations Squadron (SOS).

Following service in S.E. Asia, the 20th SOS remained in the business of providing support for special operations on a worldwide basis. This has resulted in operations during Desert Shield, Desert Storm and many, many other missions, which cannot be described for security reasons, and which continue into the present.

The author has done a great job of telling the story of this unique outfit. The words are interspersed on each page with pictures of the people, places and equipment, involved. This makes for an enjoyable read, and really brings out the valor of these remarkable aviators.

There is an excellent picture galley showing every aircraft operated by the Green Hornets, along with pictures of the air and ground crews. Also included is a collection of Patches worn by members of the 20th SOS.

A great book, highly recommended.

Paul Butler



Touching Space, The Story of Project Manhigh, by Gregory P. Kennedy: Schiffer Publishing, www.schifferbooks.com, ISBN 9780764327889, Softcover, 128 pages, 8.5 x 11 in. 130+ pictures, illustrations, index, Appendix, Bibliography: \$24.95.

This book describes the development of balloons and their use in scientific experiments. The story begins in the 1700s with the early Montgolfier flights, and continues into the modern era. The early use of hot air bal-

loons for research purposes is covered, and this is followed by the first stratospheric flights of the Picard Brothers and other explorers.

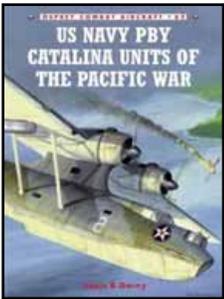
Following WWII, interest in high altitude research increased. This was because of early experimental flights of manned rocket-powered aircraft, such as the Bell X-1. These flights led to the U.S. military becoming involved in sponsoring high-altitude balloon flights using laboratory animals as test subjects.

Starting in 1955, the decision was made to move on to manned flights. A contract was awarded to the Winzen Research Co. to develop a balloon and capsule system that would be capable of safely carrying a man up to an altitude equivalent to 99 percent of the atmosphere. This proposal became "Project Manhigh."

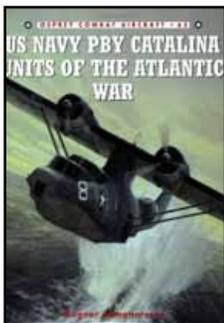
The last three chapters go into detail in describing these flights. They cover the technical as well as the human factors that were involved in this project.

"Project Manhigh" was an important research tool that was used by later explorers to learn more about what would be needed to operate in the new environment of space. Unfortunately, it never gained the notice that other early space operations received. This book gives credit to the people that made it work. *Touching Space* is recommended to anyone interested in early space exploration, and an interesting human story.

Paul Butler



U.S. Navy PBY Catalina Units of the Pacific War: by CDR Louis B. Dorney: Osprey Publishing, www.ospreypublishing.com, ISBN 9781841769110, Paperback, 96 pages, 9.75 x 7.25 in. 80 pictures, Index, Appendices: \$20.95.



U.S. Navy PBY Catalina Units of the Atlantic War: by Ragnar J. Ragnarsson: Osprey Publishing, www.ospreypublishing.com, ISBN 9781841769103, Paperback, 96 pages, 9.75 x 7.25 in. 90 B&W, 30 color pictures, Index, Appendices: \$25.50.

These two books are part of the Osprey Combat Aircraft Series, compiled by series editor Tony Holmes. They are combined in this review because they both relate to the story of Consolidated PBY *Catalina* patrol bomber operations during WWII.

The first volume covers the U.S. Navy operations in the Pacific Theatre during WWII. This includes missions such as submarine hunting, air sea rescue, and night anti-shipping sorties.

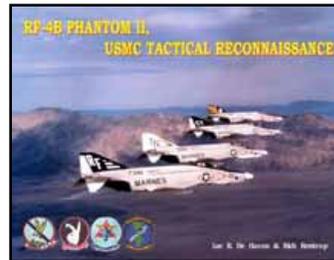
The second volume covers U.S. Navy PBY missions in the Atlantic Theatre of Operations.

Both books tell the story of this well-known patrol

bomber, including the history of the military units that flew them. The beginning chapters cover the early development period, and lead into the early days of WWII. Because of its early deployment in the Pacific and operations during and after the Japanese attack on Pearl Harbor, the *Catalina* seems to be better known for its missions against the Japanese. These included long-range patrol, anti-submarine operations, search and rescue, and night anti-shipping raids. However, the PBY was also an important factor in the Atlantic Theatre. It played an important part in the destruction of the German submarine wolf packs that preyed on shipping in the vital routes between the U.S. and Europe.

This is well covered in these two well written books. Both books include excellent color and black-and-white photos showing unit markings and color schemes, which will be of interest to aircraft modelers and aircraft historians. These books are highly recommended to anyone interested in the history of the Consolidated PBY *Catalina* in WWII.

Paul Butler



RF-4B Phantom II, USMC Tactical Reconnaissance, by Lee R. DeHaven and Richard Rentrop. APT Collectibles, PO Box 788, Bonsall, CA 92003, December 2007, 387 pages, eBook (PDF), 400+ photos (most in color), 50 plus

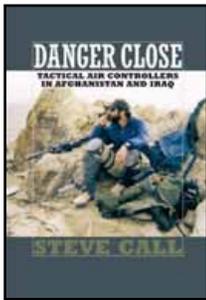
drawings, ISBN 978-0-9801092-0-7. Priced at \$33.95, plus \$4.65 s&h.

Lee DeHaven and Richard Rentrop have produced a monumental work covering the development and deployment of the McDonnell Douglas RF-4B *Phantom II* with the USMC. This extensive work covers the unit histories of Marine Corps squadrons that operated this aircraft. This includes VM CJ-1, VM CJ-3, VM CJ-3 and VMFP-3 and is loaded with first person accounts from the aviators, aircrew and ground personnel associated with the aircraft. From Vietnam operations to final phase out, the reader gains insight to how the aircraft was deployed and its capabilities to provide valuable tactical reconnaissance information to field commanders. The book includes an appendix providing the aircraft histories for each RF-4B produced and is loaded with photos of most of these aircraft.

For the modeler, the book contains color drawings of all the various unit markings and their evolution. The drawings are complemented by color photographs showing these paint schemes. Also included are drawings from the Plane Captain's Handbook and other maintenance documents.

This electronic book (eBook) provides interactive navigation, even down to being able to view full screen versions of the photos and drawings incorporated in the text. Using standard PDF format, it is compatible with all popular computer operating systems.

Paul Minert



Danger Close, by Steve Call. Published by Texas A&M University Press, 4354 TAMU, College Station, TX 77843-4354, ISBN 978-1-58544-624-7, Hardbound. Available from the publisher, \$29.95. Phone (800) 826-8911.

Danger Close was written by a member of the "on the ground" forward controller group that directed the other half of the team, the pilots who flew the attack aircraft against the enemy ground forces. It is an extremely well presented documentation of the life and activities of a unique group of Air Force warriors who spent their time on the ground in the mountains of Afghanistan fighting in cooperation with Afghan rebels as close air-support directors against the Taliban regime.

The author leads the reader through the initial difficulties in forming the Tactical Air Control Parties (TACP) against the preconceived ideas of both the Air Force and the Army as to how the air support groups should be used to best advantage.

The book covers mainly the ground based teams and their activities involved in detecting and remaining in close contact with the enemy and calling in friendly attack aircraft without being spotted themselves. Giving individual team members of the ground crew a chance to tell their own stories of the action leaves the reader with deep respect for the guts and fortitude of the American front line serviceman.

Bruce Cunningham

Wants & Disposals

Wanted: Information on Michael Rabin. He traveled extensively by air in the '50s and '60s, and possessed a large collection of aviation memorabilia. If you knew of him please contact:

Leonie Rosenstiel, Ph.D
P.O.Box 94057,
Albuquerque, NM 87199-4057
Phone: 505-797-9397

Wanted: Back issues of the AAHS Journal. Specifically:
1987 – Fall (Vol. 32, No. 3)
1997 – Spring (Vol. 42, No. 1) – Fall (Vol. 42, No. 3)
1999 – Winter (Vol. 44, No. 4)
2001 – Spring (Vol. 46, No. 1)
2002 – Spring (Vol. 47, No. 1) & Summer (Vol. 47, No. 2)
2003 – Spring (Vol. 48, No. 1) & Fall (Vol. 47, No. 3)

Contact: Gary Newman via AAHS office

Wanted: Looking for photos or information about the markings of the Cessna O2A as was used in the Vietnam war.

Contact: Dramcy via AAHS office

Wanted: Looking for photos, slides and negatives as well as articles and memorabilia of any F-101 Voodoos. More interested in active duty birds, but always enjoy MASDC shots as well as unusual or air-to-air shots. Also looking for any info or photos of ROCAF RF-101s in Taiwan. Please let me know what you may have for sale or trade.

Aric Aldrich
Voodoos4ever@gmail.com

Wanted: I have submitted a story detailing the history of de Havilland Mosquito N1203V, previously flown by Dianna Bixby in an around-the-world speed record attempt.

I wish to obtain a small 3 x 5 size photo or a scan of Douglas A-20, 43-22217, NL63148, to illustrate the above AAHS article. Ms Bixby died in the crash of this aircraft on January 2, 1955.

Contact: Norman Malayney via the AAHS office

For Sale: Collection of *Jane's All the World's Aircraft*. List of available issues and prices are available upon request.

Flight and maintenance manuals organized by airplane manufacturer, 1920s through 1970s, 13 page catalog listing. Send SASE to:

John B. Russell
454 Jacqueline Dr.
Santa Rosa, CA 95405
Phone: 707-545-1940
Email: Jonnedianerussell@sbcglobal.net

For Sale: Large color prints and illustrations, B&W photos, etc., of military airplanes released by A/C manufacturers, mainly during the 1950s decade. Also, a limited selection of books on aviation and military subjects. To obtain lists, send self-addressed, stamped envelope or preferably e-mail.

Wanted: Photos, slides, and serial numbers on F-84F aircraft assigned to 103 and 117 Fighter Squadrons of PA ANG. Also on earlier F-84 straight-wing *Thunderjets* assigned as ground trainers. Squadrons were located at Philadelphia International Airport, and some aircraft retained USAF marks for many months.

Bob Esposito
409 Orchard Ave.
Somerdale, NJ 08083
E-mail: baesposit@verizon.net

Wanted: Detail and scale publication “P-51 Mustang – Part Two,” by Bert Kinzey.

Kenneth W. Race
906 Liberty Court
Cupertino, CA 95014
Phone: 408-996-0878

For Sale: Aviation books:

Aviation Quarterly, #4020, Vol. 1-5, 1974-1979
AAHS Journals, 1971- 1999
Chronicle of Aviation, 1992, 984 pgs
Epic of Flight, 23 Vol. set, 1980-1983
The Lore of Flight, 1970, 2509 pgs
Ghosts, 1978, 120 pgs
Pictorial History of Fighter Aircraft, 1989, 192 pgs
Flight-A Poster Book, 1978, 64 pgs
National Air & Space Museum, 1992, 497 pgs
Waco-Cabin Series, 1981, 110 pgs
Jane's All the World's Aircraft, 1941
Jane's All the World's Aircraft, 1951-52, 804 pgs
Jane's All the World's Aircraft, 1954-55, 379 pgs
Jane's All the World's Aircraft, 1956-57, 454 pgs
Jane's American Fighting A/C of the 20th Century,
1991, 320 pgs
Jane's Encyclopedia of Aviation, 1989, 984 pgs
Air Navigation – USAF, Vol. 2, 1955, 440 pgs
Air Navigation - USAF, Vol. 3, 1959
Thunder in the Heavens-Classic American A/C of WWII, 1994, 144 pgs

Magazines

International AA Digest, 1973-1979
Air Classics Quarterly Review, 1974-1979
Air Classics, 1972-1991
Air & Space, 1991-2001
Air Progress, 1956-1992
Flying, 1954-2001
Sport Aviation, 1965-2000
Sport Flying, 1967-1980
AOPA Pilot, 1970-2001
Vintage Airplane, 1971-2001
Air Enthusiast, 1981-1988

Misc. Items

Runway lot, Lake Riverside, CA 2.69 acres, 42'x 75' hangar, well, electricity, 64 trees.
1943 Howard DGA-15 project, extra engine mount
New Howard DGA-15 wings
2 Wright Whirlwind R-975-11 engines
Tools/compressors/table saw/rollaways/bench grinder

Myra C. Peterson
619 S. Malden Ave.
Fullerton, CA 92832
Phone (714)526-3936
e-mail: crafty1@surfside.net

Donations

The following members have made generous donations to the AAHS. These donations go into the general fund to help pay the costs of producing the *Journal* and *Newsletter*. All monies are used to support this activity and no salaries are paid to any board member even though many hours are spent by these individuals in promoting and maintaining the Society.

Our appreciation and thanks go out to these individuals and to any one else whom we may have inadvertently overlooked.

Ralph L. Barr
Dale W. Becker
Henry R. Belcha
Jack M. Bell, CHP
Sidney H. Bradd
Lewis W. Bradley
Robert N. Bredau
R. Neal Carlson
Joel K. Caulton
Fred C. Ellsworth
William A. Faison, Jr.
A. Hans Friedebach
Joe Earl Haynes
Leroy V. Hester
Walter E. Hinkson
Joseph D. Holland
MSGT Walter D. House (Ret.)

R. Steven Johnston
Robert B. Kitt, Jr.
Ellen Kurath
Donald M. Lewis
Arthur F. Livergood
John E. McKillop
C.T. “Modlin, Jr.”
David M. Niles
Dr. Roger A. Peterson
Matti Rajala
James G. Smith
Bobby Glen Smith, MD
Ronald E. Stanford
Charles E. Stewart
Gordon E. Strickland, Jr.
Lewis L. Taylor
Christopher S. Trobridge

Background photo composite by Robert Burns

New Members

Joseph H. Amend MBR 19400
702 S Dixie Hwy.
Rudolph, OH 43462-9612
Interests: WWII

Dean Bradley MBR 19401
3021 N Twin Lakes Dr.
Avon Park, FL 33825-9103
Interests: Antiques / WWII

Atlantic Models, Inc. MBR 19402
7661 NW 68st, Unit 117
Miami, FL 33166-2850

Laurence E. Baker MBR 19403
173 Las Lomas Dr.
San Angelo, TX 76904-7928
Interests: USAF / General Aviation

Ron DiRocco MBR 19404
1525 E Ocean Ave.
Norfolk, VA 23503-2310

George Korade MBR 19405
1020 Virginia St.
Vallejo, CA 94590-6307

Ken Freeze MBR 19406
1521 Ridgewood Dr.
Martinez, CA 94553-4223
Interests: Experimental Research

Stephen J. Richardson MBR 19407
45170 Middlebury Lane
Canton, MI 48188-3209
Interests: All aviation / General -
Commercial - Military +
Personalities and Accomplishments

Jo Hendren MBR 19408
5030 Lancaster St., Apt. 2
Harrisburg, PA 17111-5615
Interests: Early Aviation /
Personalities

James A. Oleson MBR 19409
1417 2nd Street
Arnolds Park, IA 51331-7561
Interests: WWII / Military Aviation /
Jet Age/ Author Hd Copy

Donald D. Arabian MBR 19410
1495 Northern Neck Dr.
Vienna, VA 22182-5513
Interests: WWII / Golden Age

Alan C. Carey MBR 19411
1623 Sylvania Ct.
Round Rock, TX 78681-1989
Interests: Navy / Marines

William Kyros MBR 19412
188 D Street
Dracut, MA 01826-2162
Interests: WWI & WWII / Lighter
than air (LTA)

Richard N. Fliteau MBR 19413
60 Stillwater Dr.
Nashua, NH 03062-2200

Jack R. Bol MBR 19414
2802 S Rouslyn St.
Denver, CO 80231-6051
Interests: Jet Age / USAF

Col. H. David O'Malie MBR 19415
9080 Blue Jug Landing
Burke, VA 22015-2106
Interests: Golden Age / Commercial

David Whitman MBR 19416
2050 263rd St.
Lomita, CA 90717-3424
Interests: All areas & Racing
Aircraft

Sam McGrath MBR 19417
13472 Mason Village Ct.
St. Louis, MO 63131-1011

Lee Meek MBR 19418
2 Oakfield Close
Bacton, Suffolk IP14-4UH
England
Interests: Jet Age/ USAF

Henry R. Gage MBR 19419
9578 Ladyslipper Lane
Missoula, MT 59808-9627
Interests: USAF / Commercial
Airlines

David Ramsey MBR 19420
PO Box 66
Gasquet, CA 95543-0066
Interests: WWII / Golden Age

Richard C. Mariani MBR 19421
16 Laurelwood Dr.
Bernardsville, NJ 07924-2615
Interests: Golden Age / General
Aviation

Corsicana Field Aviation
Heritage Foundation MBR 19422
C/O Gary Farley
9000 Old Navarro Road
Corsicana, TX 75109-9065
Interests: Early Aviation / Golden
Age / WWII/ Personalities / USAF

Thomas H. Epperson MBR 19423
27611 Lost Trail Dr.
Laguna Hills, CA 92653-5865

Eric Franke MBR 19424
6262 Larchwood Dr.
Huntington Beach, CA 92647-2306

Christopher J. LeFave MBR 19425
6217 Callaway Pl.
Rancho Cucamonga, CA 91737
Interests: Noisy Airplanes / Aircraft
Archaeology

Birger Bergesen MBR 19426
PSC 69 Box 1000
APO, AE 09707
Interests: Commercial Airlines/
American export / Am. Overseas /
Flying Boats / B17E & F

Warren Catlin MBR 19427
8224 Country Oaks Ct.
Sarasota, FL 34243-4318
Interests: WWII / General Aviation

John Cooper MBR 19428
6 Westlawn Ave.
Daly City, CA 94015-1026
Interests: WWI / WWII

Thomas Gower MBR 19429
1850 Habersham Gate Dr.
Cumming, GA 30041-8053
Interests: Golden Age / WWI

Tom Wisker MBR 19430
WBAI / PACIFICA RADIO
625 West 169th St., #22B
New York, NY 10032-0474
Interests: USAF / ISRAELI AF /
USAAF early WWII / ANG



Lockheed F-104D-15-LO Starfighter, 57-1331, at Edwards AFB on September 13, 1967, is currently located at the USAF Armament Museum, Eglin AFB, Fla. (Photo by Stephen Miller, AAHS#P000574)



TEMSCO Helicopters Eurocopter AS.350B3, N405AE, c/n 3286, on the Mindenhall Glacier, Alaska, on July 27, 2004. (Photo by Stephen Miller, AAHS#P000575)

Photo Archives Report

Kase Dekker and his crew have been busy with the organizing of the Society's photo archives. In this past quarter, they have cataloged almost 10,000 negatives and slides which have been added to the on-line catalog database. Included with this latest update of the on-line catalog is the addition of 450 scanned preview images. These additions bring to over 34,000 cataloged images and over 1,500 image previews that are available to Society members.

While work continues in this area, there is still a lot to be done. At present, there are over 40,000 slides that have been organized by manufacturer and model, with an estimated equivalent number still in boxes. An unknown number of negatives still require cataloging and little effort has been made to date in organizing the photographic prints.

If you are looking for something particular and can't find it in the existing database, then contact Kase Dekker at the AAHS office and we'll see if we can find it in the uncataloged portion of the collection.

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.

Pricing: Black & White or Color	
5" x 7"	\$4.00
8" x 10"	\$6.00
Digital Images	CD Base Price \$2.95
	each digital image \$1.00
Domestic Shipping & Handling (per order) \$2.50	
International Shipping & Handling (per order) \$5.00	

Ordering Guidelines

1. Order images in numerical order
2. For every requested image, please provide a 1st and 2nd alternative image.
3. The AAHS Print Service is restricted to members only. Please provide name, address, city where your *Journals* and *Newsletters* are shipped to.
4. Prints are available in two sizes only. Price includes both black-and-white and color images.
5. Digital images will be scanned at a resolution to provide photographic quality 8"x10" images (roughly 3300x2800 pixels) in JPEG format with highest quality setting.
6. Orders will be processed the 1st and 15th of each month and mailed via first class postage.
7. Credit to the AAHS and the photographer or donor of the photo must be expressed if the image is used in publication.

Each order must be accompanied by a check, money order, VISA or MasterCard information (your name as it appears on the card, credit card number, expiration date, and billing address). Send orders to:

AAHS Print Service
2333 Otis Street
Santa Ana, CA 92704-3846



Folded Wings

John W. Myers, 96, a civilian test pilot in WWII who was instrumental in the development of the first, purpose-built, night fighter, the Northrop P-61 *Black Widow*, passed away January 31, 2008, in Beverly Hills, Calif.

A graduate of Harvard Law School in 1936, Myers decided to pursue aviation instead, eventually joining Northrop Aircraft as its chief engineering test pilot in 1941. He was best known for his testing of the P-61 and subsequent teaching of military pilots to fly it. These skills led to his nickname "Maestro."

His flying experiences included training pilots to fly the P-61 in New Guinea in June 1944, where he crossed paths with Charles Lindbergh and gave him a ride in a *Black Widow*.

Myers would go on to become vice president and director of Northrop in 1946. In 1954, he became chairman and principal stockholder of Pacific Airmotive, Corp. In 1970, he formed Airflite, an FBO facility at Long Beach Airport, Calif. He was a board member of the National Air and Space Museum.

His love of flight, and good health, kept him in the left-seat of his Citation II SP until he was 90, and he retired from flying his jet helicopter at the age of 93.

Frank Nicholas Piasecki, 88, an engineer who flew the second successful helicopter, the PV-2, in the U.S., and built the first technically and commercially viable tandem-rotor helicopter, died February 11, 2008, in Havertown, Pa.

A major helicopter visionary of the 20th century, his most significant contribution was the 1945 tandem-rotor helicopter that could carry three times the weight of conventional helicopters. His contributions helped extend the use of helicopters into combat, commercial and rescue applications. Piasecki's work contributed to the later development of the Chinook and Sea Knight, both of which are still in use.

He was a recipient of the National Medal of Technology, the U.S.'s highest honor for technological achievement, as well as the National Air and Space Museum's lifetime achievement award. He is an inductee of the National Aviation Hall of Fame.

Lloyd Mitchell Burstein, 87, died March 7, 2008, in Fairfax, Va. He was a retired physicist with the Federal Aviation Administration where he participated in the development and deployment of radar systems that form the modern air traffic control and instrument landing systems. He also helped develop the Traffic Alert and Collision Avoidance System (TCAS) now used in all commercial airliners.

Lt. Col. Christopher G. Turoff, USAF (Ret.), 86, died in Arlington, Va., December 11, 2007. He enlisted as an aviation cadet in the Army Air Force in 1943 and would serve as a bombardier and navigator in the 509th Composite Group, under the command of Col. Paul Tibbets. Turoff was part of one of the 15 crews that trained in Wendover, Utah, in preparation for the mission of dropping two atomic bombs on Japan.

He left the service after the war only to be recalled by the Air Force, subsequently being placed on loan to the CIA. His service would include assignments in both Greece and Vietnam during the 1950s and 1960s

Donald Lopez, 84, deputy director of the National Air and Space Museum and WWII fighter pilot died March 6, 2008, in Washington, D.C. He flew with the 23rd Fighter Group of the 14th Air Force in China where he racked up five combat victories during 101 missions. He joined the Smithsonian in 1972 and was part of the team responsible for the planning and opening of the NASM in 1976.

Lt. Col. John Matthew "Jack" Slattery, USAF (Ret.), 80, died March 6, 2008, in Fort Washington, Wash. He was an Air Force pilot and noted helicopter historian.

Col. Slattery served with the USMC in the waning days of WWII and later in Korea where he was evacuated by helicopter. In 1954 he entered the USAF aviation cadet program and became a helicopter pilot. He served two tours in Vietnam, retiring in 1974.

His decorations include the Legion of Merit, Distinguished Flying Cross, Bronze Star, and 11 awards of the Air Medal and Air Force Commendation Medal.

Dewey Calloway Nash Jr., 66, passed away February 27, 2008, in Arlington County, Va. Mr. Nash was a longtime artist and illustrator for the USAF and other federal agencies. He was an illustrator during the early research and development phases of the A-10 and F-22 programs. He served as the lead artist and designer for the 100th Anniversary of Flight exhibition, producing more than 200 panels in this display.

George Tibor Grottle, 90, died March 6, 2008, in Alexandria, Va. He was a decorated WWII pilot with Brig. Gen. Claire Chennault in China. He flew B-25s and was awarded the Distinguished Flying Cross, the Silver Star, and other commendations including the British Distinguished Flying Cross for crash-landing his bomb-laden aircraft in a Chinese rice paddy. Following the war he was stationed at Wright-Patterson AFB, Patrick AFB, the Pentagon, Andrews AFB, and the Air Force Satellite Control Facility in Sunnyvale, Calif. Most of these assignments were associated with missile systems.



Fairchild AC-119K Stinger, 52-5910, c/n 11089, of the 1 SOW seen at Andrews AFB September 15, 1972, shortly before being transferred to the South Vietnam AF. (Photo by Stephen Miller, AAHS#P000573)



The business side of AC-119K, 52-5910. (Photo by Stephen Miller, AAHS#P000574)

AAHS Journal Back Issues

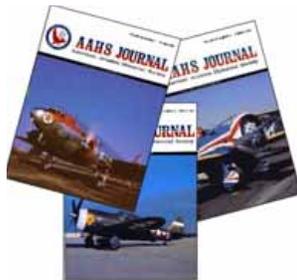
Looking for back issues of the *AAHS Journal*? You can now order them on-line from APT Collectibles. Just point your browser to:

<http://www.aptcollections.com/planes.htm>

and select "American Aviation Historical Society Journals."

Order on-line or directly from:

APT Collectibles
P.O. Box 788
Bonsall, CA 92003





IMPROVE YOUR MODELING SKILLS. . .
THROUGH IPMS/USA
"By Modelers, For Modelers"



Membership includes an annual, 6 issue, subscription to the IPMS/USA Journal, and much more.

YES! Enroll me now in IPMS/USA.
 I enclosed \$_____ for a one year membership in IPMS/USA. I understand this membership includes a subscription to the IPMS/USA Journal.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Signature _____
(required by Post Office)

TYPES OF MEMBERSHIP: (check the one that applies)

Adult \$19 Junior \$9 (17 yrs & under)

Canada and Mexico \$25

Other Foreign \$28 (I.M.O. or Bank Draft only)

Mail to:
IPMS/USA WWI
P.O. Box 6138
Warner Robins, GA
31095-6138

Make checks or money orders payable to IPMS/USA
 - DO NOT SEND CASH -

GET INVOLVED IN YOUR SOCIETY!

Your management team is looking for volunteers to help the Society.

Willing to review a book?

Want to help the Photo Archives by identifying aircraft?

Contact the Society's headquarters and let us know you are ready, willing and able. Write or email to: membership@aahs-online.org

NEW MEMBER DRIVE

The AAHS is entering 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 that are interested in aviation history?

Pass them a copy of the New Membership Application on the next page and encourage them to join!

If each member encourages a single individual to join the Society, 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!

MAKE A DIFFERENCE

RECRUIT A FRIEND



MEMBERSHIP APPLICATION RENEWAL

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 Journal published to date during this calendar year (regardless of the date of joining), plus those issues of the Newsletter published after the date of joining. I also understand that renewal is due at the end of the calendar year in which membership will expire. (Valid through 2007)

- 1 Year \$39.50
- 2 Years \$78
- United States \$39.50
- Canada & Mexico \$46
- Other Countries \$59
- \$91
- \$117

Make check or money order payable to AAHS in U.S. Dollars

Enclosed is my check/money order for \$ _____ (U.S. Funds)

Office Use AAHS Member/Chapter Sponsor (Optional)

Member No.

Date Rec'd.

NAME _____

STREET _____

CITY _____

STATE/COUNTRY _____ ZIP _____

eMAIL ADDRESS _____

INTERESTS _____

Charge to VISA MasterCard MasterCard Bank # _____

Account # _____ Exp. Date _____

Signature _____

THE YANKEE FLYER

Produced by the Massachusetts Aviation Historical Society

Features 14 vintage photos and highlights important dates and events each month focusing exclusively on Massachusetts aviation heritage

MAKES A GREAT GIFT FOR FAMILY, FRIENDS, BUSINESS ASSOCIATES & CUSTOMERS!

Only \$9.00, postage and sales tax included. \$8.00 each for orders of 10 or more.

FREE calendar if you join MAHS today!
MEMBERSHIP IS JUST \$25.00 /YEAR & INCLUDES MONTHLY MEETING PLUS QUARTERLY NEWSLETTERS!

Send check or money order to:

M.A.H.S. P.O. Box 457 Wakefield, MA 01880-0957



The third North American YAT-28E prototype, 51-3788, at Scott AFB on August 24, 1966. (Photo by Stephen Miller, AAHS#P000572)

ADVERTISE in the AAHS NEWSLETTER

PAGE SIZE	SINGLE ISSUE	FOUR ISSUES
Full Page	\$440.	\$1500.
Half Page	\$220.	\$ 760.
	7-1/2" x 4-1/2" MAX.	
	3-1/2" x 9-1/2" MAX.	
Quarter Page	\$110.	\$ 380.
	3-1/2" x 4-1/2" MAX.	
Eighth Page	\$ 55.	\$190.

The AAHS office is open on Wednesday (p.m. only).
Voice: 1-714-549-4818 (Wednesday p.m. only, Pacific Coast time)

Email: editor@aahs-online.org

Note: Ads not "Camera Ready" will not be accepted.

AIRCRAFT OF AIR RACING'S GOLDEN AGE

A History of the Raceplanes from 1928 - 1939

- 1071 Pages
- 158 Scale Drawings
- Over 1200 Photos
- Color Photos
- Color Artwork
- Hardbound
- Two Volumes, Jacketed

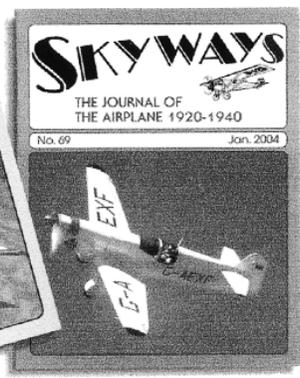
Price: \$75 + \$10 Inland Shipping

Mail Check to:

Robert Hirsch
8439 Dale Street
Buena Park, CA 90620
or Search Ebay on Book Title



JOIN NOW...



RECEIVE A **FREE ISSUE**
WITH YOUR NEW MEMBERSHIP
(PLEASE MENTION THIS AD)

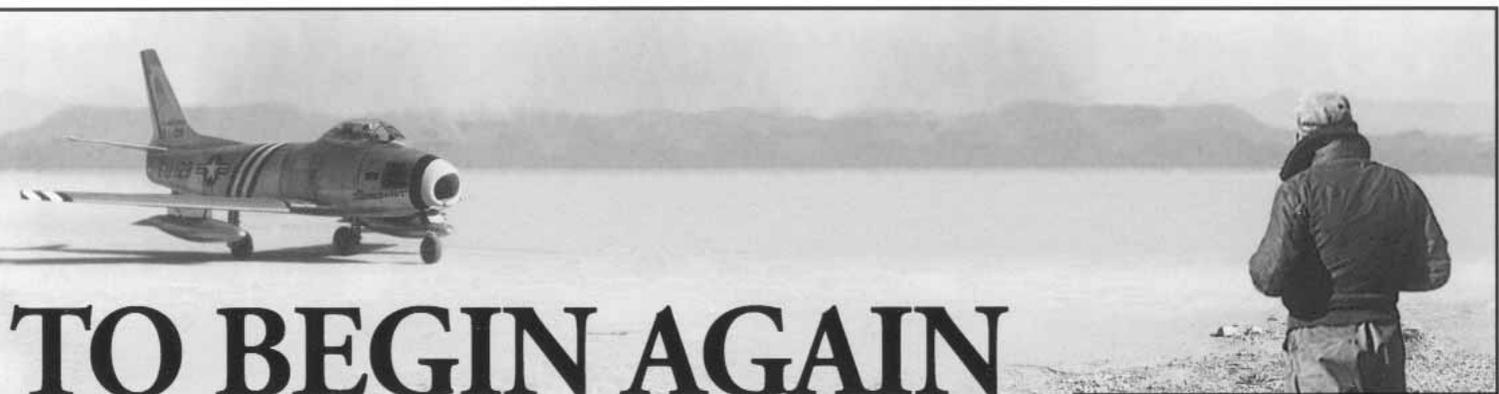
SAMPLE ISSUE \$4
PLUS \$3 POSTAGE

WORLD WAR 1 *Aeroplanes*, INC.
15 CRESCENT ROAD, POUGHKEEPSIE, NY, 12601
(845) 473-3679

www.ww1aero.org www.skywaysjournal.org

MOVING???

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



TO BEGIN AGAIN

The hunters and the hunted.

In June, 1950 North Korean troops crossed the 38th Parallel starting a war that cost over 33,000 American lives. Key to U.S. success in halting the Koreans, and later the Chinese, was control of the air where USAF Sabres reigned supreme in combat with Russian-built MiG-15s.

To Begin Again, by Terence Finn, tells the story of a Georgetown University history professor who, recalled to the Air Force and sent to Korea, commands a special F-86 detachment that engages the MiGs 30,000 feet above the Yalu River.

Available now at Amazon.com and www.ivyhousebooks.com or call (919)782-0281.
Purchase hardback edition for \$26.95.

a novel of love and war

“Terence Finn, has certainly done his homework... This is a fine novel, steeped in aviation history”

— Logbook:
Great Aviation History Magazine

AAHS 2008 Calendar

It's not too late to still get one!

Place your order today to reserve your copy of the AAHS 2008 Calendar. These 13 month (Jan-Jan) calendars feature 14 of the best-of-the-best color images from the AAHS Calendar Photo Contest. Order **NOW** to assure you get yours. Calendar availability is limited, so get your order in ASAP!



\$14.95 plus \$2.50 S&H for U.S. orders

\$14.95 plus \$5.00 S&H for all others

Send Check, Money Order or Visa/MasterCard information directly to the AAHS Headquarters, or order online at the AAHS Web site by clicking the calendar button on the home page.

Only a limited number of these collector-edition calendars were printed and only a few are still available.

AAHS Coffee Cup

Get Yours NOW!

Promote the AAHS while enjoying a cup of your favorite brew. These 10 oz. cups have the AAHS logo on opposite sides.

JUST

\$12.95

including S&H for U.S. orders*



Send Check, Money Order or Visa/MasterCard information directly to the AAHS Headquarters, or order online at the AAHS Web site by clicking the coffee cup image on the home page.

** California residents; please add 7.75 percent (\$1.00) state sales tax.*

AMERICAN AVIATION HISTORICAL SOCIETY
2333 Otis Street, Santa Ana, CA 92704-3846 (714) 549-4818

Non Profit Org.
US POSTAGE
PAID
Permit No. 130
Whittier, CA