

# BRIEFINGS



September 2017

## HILLER AVIATION MUSEUM WHERE INSPIRATION TAKES FLIGHT

### THREE WINGS OVER THE GREAT WAR TRIPLANE FIGHTERS IN WORLD WAR I

*Sopwith Triplane*

*By Jon Welte*

A century ago it created a sensation when it appeared in the warn-torn skies of Western Europe. Sporting three wings and flown by a fearless squadron with distinctively-painted markings, the new aircraft alarmed enemy pilots on sight. In the hands of its most skilled operators these planes felled nearly a hundred hostile aircraft in scarcely three months. The aircraft that achieved all of this at the beginning of 1917...was the Sopwith Triplane, designed and built in Great Britain.

Biplane construction, used successfully by the Wright Brothers for their first airplane in 1903, remained common throughout the First World War. Fighters—airplanes capable of attacking other airplanes—became supremely important, as without control of the air the reconnaissance airplanes that the competing armies increasingly relied on had no hope of survival.

In 1916 Britain's Sopwith Aviation Company introduced the Sopwith Pup, a traditional biplane fighter. While easy to fly and effective for its time

period, the large wings blocked pilot visibility in many directions—an important consideration in aerial combat. Sopwith engineers sought to address this by designing a new fighter replacing two broad-chord wings with three narrow ones—and the Sopwith Triplane was born.

The new Sopwith had been designed with pilot visibility in mind, but pilots discovered that the three-wing configuration gave it remarkable maneuverability and climb performance. When introduced in combat in 1917, the Triplane gained an enviable reputation in a very short time. Canadian ace Raymond Collishaw flew the Triplane while leading 10 Naval Squadron's B flight in combat over the Western Front. Painting their aircraft black, the Canadians met with enormous success—even when they tangled with the legendary Jagdstaffel 11, commanded by Manfred von Richthofen.

The experience of von Richthofen and his Flying Circus (then a squadron of brightly painted Albatross fighters) and other German pilots led to a proliferation of triplane designs in the Imperial German war machine. Designer Anthony Fokker inspected a Sopwith Triplane that had been forced down behind German lines. Impressed, Fokker led his team in an effort to develop a triplane with superior performance, and the first prototypes flew in the summer of 1917. The new plane, designed Fokker Dr. I ("Dr" for dreidecker, or triplane), was taken up by von Richthofen's squadron for evaluation at the end of August. Von Richthofen

#### OPEN COCKPIT

SATURDAY SEPTEMBER 9  
10AM-2PM



#### HALLOWEEN HANGAR HAUNT

SATURDAY  
OCTOBER 28  
10AM-12PM

HELICOPTER  
PUMPKIN DROP  
AT 12NOON



#### PENINSULA OKTOBERFEST

SATURDAY  
OCTOBER 14  
5PM - 10PM  
SEE PAGE 7  
FOR DETAILS



Smithsonian Institution  
Affiliations Program

himself flew the new Fokker at the beginning of September 1917 and quickly shot down two Allied aircraft, reporting back that the Dr. I was superior to existing equipment.

### Fokker Dr. 1 Triplane

Both the Sopwith and Fokker triplanes had exceptional maneuverability due to a convergence of two unrelated factors. First, the triplane structure itself. By spreading the lift required to make the airplane fly

among three wings instead of two, the individual wings could be smaller. In the Sopwith Triplane, the wings were made narrower, improving pilot visibility (and also aerodynamic efficiency). The Fokker triplane took a different approach and shortened the wings instead. Although the initial Fokker prototypes had inadequate aileron control (the British plane had ailerons on each wing, while the Fokker did not), in service both planes had excellent turn rates and exceptional climb performance.

Turning performance in both designs was further enhanced by their use of rotary engines. The first adapted to use in airplanes was the French Gnome engine, designed and built by the Seguin brothers. The rotary engine differs from either in-line or radial engines in that the entire engine rotates around a crankshaft that is stationary and bolted to the airframe. The propeller is simply attached to the engine and rotates along with it. Rotary engines were mechanically simple, relatively lightweight and had excellent cooling characteristics. Lincoln Beachey famously traveled to France before the war to secure two such engines for use in his aerobatic aircraft. One may be viewed in his Little Looper airplane displayed at the Hiller Aviation Museum.

While the rotary engine was adopted in early airplanes for reasons related to engine performance, fighter pilots immediately discovered another advantage: the heavy, rotating mass at the front of their airplanes provided tremendous torque that could translate into very fast turns, at least in the direction favored by the engine's rotation. This effect was more pronounced with triplanes, which had proportionately shorter and/or narrower wings and a shorter fuselage than a biplane of comparable power, and hence had less mechanical and aerodynamic resistance to the rapid turning forces.

### Manfred von Richthofen, The Red Baron

Along the ever-rising spiral of aeronautical technology, however, the triplanes were left behind. The Sopwith Triplane was withdrawn from service even as the Fokker was introduced; the two never met in combat. The Fokker gained an appreciable reputation, due in part to its use by leading German ace von Richthofen, but the triplane design increased drag as well as maneuverability and the plane could not keep up with newer, faster biplanes. Worse, a series of structural failures interfered repeatedly with production and prevented the Dr. I from being built in large numbers, even during its heyday. These factors led to production being discontinued six months before the end of the war, just weeks after von Richthofen himself was killed flying a Dr. I on his final mission. More modern biplanes such as the famous

Sopwith Camel ruled the skies at the time of the Armistice—yet even these would be obsolete long before the shadow of war fell across Europe once more just two decades later.



Restoration team working on the new DR.1 Fokker Triplane

Although two Sopwith Triplanes are preserved in museums, no original Fokker Dr. I triplanes exist today. A handful of surviving aircraft found their way to exhibitions in German museums, but

all were destroyed during World War II. However, the iconic design remains a popular subject for reproduction aircraft. The Hiller Aviation Museum's Restoration Shop is fabricating a full-scale replica, authentic in design from its steel tube-welded construction to the intricate wooden ribs of its triple wings. Destined for the Museum's Beginnings of Flight collection, the Fokker tells a story of rapid technological progress, and equally rapid obsolescence, that resonates in Silicon Valley today much as it did in the skies of Western Europe a century ago.

### Resources

- Fokker: The Creative Years*, A R Weyl, 1965
- Fokker – The Man and His Aircraft*, Henri Hegener, 1961
- Richthofen, Beyond the Legend of the Red Baron*, Peter Kilduff, 1993

# DAY OF DRONES

Saturday Aug 26  
10AM - 2PM

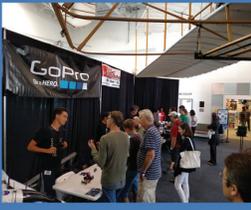


Presentations

Commercial & Private Displays

Drone Flight Area

Nano Drone Racing








Hiller Aviation Museum

601 Skyway Road, San Carlos

(650) 654-0200 [www.hiller.org](http://www.hiller.org)



HILLER AVIATION MUSEUM  
PRESENTS

# Not Even the Sky is the Limit

BENEFIT GALA



**Saturday, October 21, 2017**

Hiller Aviation Museum  
601 Skyway Road  
San Carlos, CA 94070  
[www.hiller.org/gala](http://www.hiller.org/gala)

Individual Ticket \$300

Table Sponsorships Available  
\$15,000, \$10,000, \$5,000,  
\$3,500

5:30 pm / Cocktails  
7 pm / Dinner and Auction

## **BENEFITING THE MUSEUM'S AVIATION AND STEM EDUCATION PROGRAMS**

Keynote by Airline Captain, Olympian,  
and JetBlue Technology Ventures President  
**Bonny Warner Simi**

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- My payment is enclosed
- Contact me about sponsorship
- I cannot attend; enclosed is my donation
- I would like to donate an in-kind auction prize

MAIL TO:

Rebecca Duran, VP of Development  
Hiller Aviation Museum  
601 Skyway Road, San Carlos, CA 94070  
[duran@hiller.org](mailto:duran@hiller.org) / 650-654-0200 x203

PAYMENT

# of Gala Tickets \_\_\_ or Sponsorship Amount \$ \_\_\_\_\_

# of vegetarian meals \_\_\_

Donation Amount \$ \_\_\_\_\_

Total \$ \_\_\_\_\_

Please make checks payable to Hiller Aviation Museum or  
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[www.hiller.org/gala](http://www.hiller.org/gala)



# WELCOME MEMBERS!

We would like to welcome the following new and returning members May through July:

Shari and Soam Acharya, Raul Aguilar and Eva Chapa, Aadel Al-Jadda and Diana Droubi, Jason and Christine Allen, Mustafa Arisoylu and Mujgan Dilek Arisoylu, Ana Arriaga and Bernabe Chavez, R.L. and N. Atchison, Eric and Erika Bailey, Jayaprakash Balachandran and Kalyani Rengarajan, Dennis Baras, Susan Battaglia, Carol Bauman and Robert, rzykucki, Ron Berkovits and Laura Schleus, Shawn and Suzette Berry, Deepthi Bhupathi and Srikanth Kurmana, Jonas Blanck, Jessica and Daniel Blatnik, Jen M. and Ueyn Block, Mark Jon Bluth and Michelle Danzer, Dave and Carolyn Bolan, Dariusz and Stanley Bolski, Alex Bonne, David Bower and Sally Glaser, Leigh Bradbury, Marco and Anna Brambille, Kris and Kim Branson, Leo Bridgeford and Cong Luo, Patricia Burchat and Anthony Norcia, Anna and Alex Burlyga, Noline Buttler, Vitaly Bychuov and Mariya Stepanischeva, Stella Calder and David Balfe, John Canny and Nicole Vanausdall, Meredith Carpenter and Gregory Hamilton, Mira and Mike Carrington, Nathan Carroll and Yume, hung, Natalie and Albert Cerussi, Ana and Jenny Chairaz, Saurev and Bernali Chatterjee, Seema and Hatinder Chawla, John Chen and Chuyung Lin, Xi Chen and Xianbiao Shu, Zhezhe Chen and Lingdi Zhao, Hui Chen and Jin Zhou, Mary and Chih-Cheng Chen, Roger and Jennie Chen, Ida Cheng and, atrick Egloff, Hitesh Chhatrala and Sunny Trikha, Shou Chin and Ying Ji, Wallace and Carol Chin., atricia and John Chocano, Jae and Yoon A. 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## President's Perspective



**I**t's been an exciting summer at the Museum! Aviation Camp soared with over 1,200 participants and a heavy focus on aviation science, bringing young people a bit closer to their

dreams of flight with hands-on experiences that are unique in the Bay Area.

We are steadily making progress in developing new exhibits for the museum. Work continues on our real time air traffic and meteorology display along the south wall of the aircraft gallery, funded by the JetBlue Foundation. Part of this project includes a program in which participants perform the roles of dispatchers, crew schedulers, meteorologists and ATC specialists in a role-playing simulation of real world airline operations. Primarily intended for use in our school programs, plans also include creating a version in which casual visitors on weekends, both adults and children, can participate in regularly scheduled programs to discover the fascinating behind-the-scenes activities that take place during airline operations.

Thank you for supporting our mission to improve understanding of science and technology using aviation as a gateway. There are great things coming, and we look forward to seeing you this fall at the Hiller Aviation Museum..

— Jeffery Bass, President & CEO

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THE MUSEUM!**  
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Boat, Airplane  
or Helicopter



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# EDUCATION PROGRAMS FALL 2017

## AVIATION CAMP

### FALL/WINTER AVIATION CAMP SPECIAL HOLIDAY PROGRAMS

NOVEMBER 2017 – JANUARY 2018

9 AM – 4 PM (EXTENDED HOURS AVAILABLE)

Take flight this holiday season at Aviation Camp! Build and fly model aircraft, take on challenging flight simulations, explore Museum aircraft and more while exploring a unique subject in flight.

#### EXTREME FLIGHT

NOVEMBER 27 – DECEMBER 1\*

#### FLIGHT SCIENCE LAB

DECEMBER 21-22

#### WRIGHT FLIGHT

DECEMBER 26-29

#### AERO ENGINEERS

JANUARY 2-5

\*No camp November 30. Partial week enrollment available. Visit [www.hiller.org](http://www.hiller.org) for more information. We'll see you there!



## DRONE RANGERS

### ADVENTURES IN MULTIROTOR FLIGHT

Grades K-5

SATURDAYS, 10 AM – 12:30 PM

SEPTEMBER 16, OCTOBER 21,  
NOVEMBER 11, DECEMBER 2

Join the robotic revolution at the Hiller Aviation Museum! Children Grades K-5 investigate the technology of remotely piloted vehicles, master multirotor flight in the Drone Plex's simulator lab, and earn their wings with basic flight training inside the Drone Plex cage. Each participant will take home a lightweight drone (no FAA registration required).



[www.hiller.org](http://www.hiller.org)  
(650) 654-0200

## AERO DESIGN CHALLENGE

Open to Grades 5-12

### SCHOOL PROGRAMS

MON-FRI, OCTOBER 23-27, 9:30 – 12:30

### PUBLIC PROGRAM

WED, OCTOBER 25, 2:00 – 5:00

Launch an adventure in design and engineering! Offered in conjunction with the Bay Area Science Festival and through the generous support of Peaxy and SAP, the Aero Design Challenge provides students unique aerospace-themed challenges. This year students design, build and test a high-performance glider. Space is limited and advance reservations are required



## PAPER PLANES

### NATIONAL PAPER AIRPLANE CONTEST FLY FOR FUN WORKSHOPS

SUNDAYS, AUGUST 27 & SEPTEMBER 17, 1 PM – 3 PM

### COMPETITION

SATURDAY, OCTOBER 7, 10 AM – 2 PM

Do you have what it takes to join the best of the best? Join the National Paper Airplane Contest and find out! Following internationally-accepted rules, build and fly competition-worthy paper planes in two different Fly for Fun workshops. To compete, register to fly with author and world-record holder John Collins on October 7.



Fly for Fun workshops are included with Museum admission. Pre-registration and a special program fee are required for the competition. Visit [www.hiller.org](http://www.hiller.org) for details.

## STARLAB SKY SHOWS

SATURDAYS, SEPTEMBER 30, OCTOBER 14,  
NOVEMBER 25, DECEMBER 9, 10:30 AM & 2 PM

Explore the stars, planets and constellations of autumn beneath the Starlab dome! Each 30-minute presentation highlights night sky objects visible from your own backyard.

Space is limited. Starlab ticket required in addition to Museum admission, may be purchased the Admissions Counter on the day of the program.



## OPEN COCKPIT

SATURDAY  
SEPTEMBER 9  
10AM-2PM

Who isn't fascinated with sitting in an aircraft cockpit? The Hiller Aviation Museum regularly provides access to aircraft in its exhibits. On September 9th the doors swing open on many others, including the Boeing 737, Grumman HU-16 Albatross, Aero L-39 and more to provide a pilot's eye view of these iconic aircraft.



## SMITHSONIAN MAGAZINE MUSEUM DAY

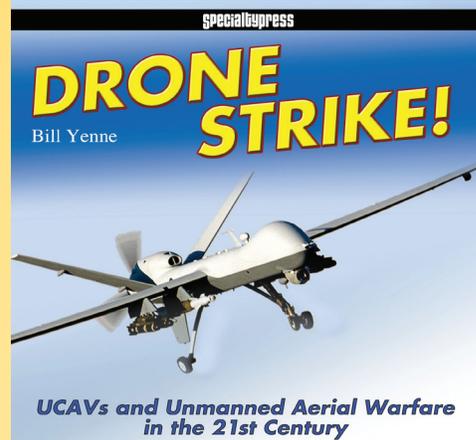
SATURDAY, SEPTEMBER 23

Free admission all day for any person (plus a guest) who presents a Museum Day Admission Card available in the September issue of Smithsonian Magazine, or visit [www.smithsonian.com/museumday](http://www.smithsonian.com/museumday) to download your Museum Day Admission Card. Each card provides museum access for two people (one Admission Card per household).



## DRONE STRIKE

PRESENTATION & BOOK SIGNING  
BY BILL YENNE  
SATURDAY SEPT 23, 11AM



The idea of an armed, combat-configured unmanned aerial vehicle, entered the Twenty-first Century much as the idea of military airplanes had entered the twentieth century – an untried and untested concept suddenly thrust into the spotlight in an unexpected global war. By 1999, few people outside the military recognized the potential of armed, unmanned flying vehicles, or Unmanned Combat Air Vehicles (UCAVs) as they were called. Today, UCAVs form a vital arm of U.S. strike forces and are controlled from halfway around the world.

In this book, the author picks up the UCAV story where he left off in his 2010 Specialty book BIRDS OF PREY: Predators, Reapers and America's Newest UAVs in Combat. Since that time, both technology and battlefield doctrine have evolved considerably and this book is a new window into that world, providing a detailed inside look into the present and future of robotic aerial warfare systems and technologies. Event included with museum admission

# CALENDAR

## SEPTEMBER

SAT, SEPT 9 • 10AM-2PM  
Open Cockpit

SUN, SEPT 17 • 1PM-3PM  
Paper Plane Contest – Fly for Fun

SAT, SEPT 23 • 10AM-5PM  
Smithsonian Museum Day

SAT, SEPT 23 • 11AM  
Drone Strike, Presentation & Book Signing

SAT, SEPT 30 • 10AM-3PM  
San Carlos Airport Open House

SAT. SEPT. 30 • 10:30AM & 2PM  
Starlab Sky Show

## OCTOBER

SAT, OCT 7 • 10AM-2PM  
Paper Airplane Contest - Competition

SAT, OCT 14 • 10:30AM & 2PM  
Starlab Sky Show

SAT, OCT 14 • 5PM-10PM  
Peninsula Oktoberfest

SAT, OCT 21 • 5:30PM-10:30PM  
Not Even the Sky is the Limit Gala

OCT 23-27 • 9:30AM-12:30PM  
Aero Design Challenge

SAT, OCT 28 • 10AM-12:00PM  
Halloween Haunted Hangar

## NOVEMBER

THURS, NOV 23  
Closed for Thanksgiving

SAT, NOV 25 • 10:30AM & 2PM  
Starlab Sky Show

SAT, NOV 25 • 9:30AM-12PM  
Santa Arrives by Helicopter

## AIRPORT DAY 2017

SATURDAY, SEPTEMBER 30  
10AM-3PM

AIRPLANE & HELICOPTER RIDES \*  
AIRCRAFT DISPLAYS \*  
EXHIBITORS & VENDORS \* FOOD TRUCKS \*  
EVENT AND PARKING ARE FREE



## FOOD TRUCK CRAZE CONTINUES!

AT HILLER EVERY WEDNESDAY  
11AM TO 2PM —RAIN OR SHINE!

The parking lot of the museum turns into a food court every Wednesday. Several food trucks participate in this gourmet event. The trucks rotate weekly, so come for your favorite truck or try something new! Dine under our porte-cochere, or indoors when it's a little cold, or, grab and go!



## HALLOWEEN HANGAR HAUNT

SATURDAY OCT 28, 10AM-12 NOON  
HELICOPTER PUMPKIN DROP AT 12 NOON!

Visit the Hiller Aviation Museum this October for a frightful treat! Come in costume and see the Gallery decked out in its spooky Halloween decorations. Join the creepy carnival games to earn special prizes, meet our flying witch and sign



her special Halloween pumpkin. Join a spooky honor guard to accompany the witch to her helicopter before she takes off and splats the great orange gourd across the landscape below in a festive salute to the Halloween spirit! Event included with Museum admission.

# ENDAR

**GOURMET FOOD TRUCKS**  
WEDNESDAYS 11AM - 2PM

**FLIGHT SIM ZONE, INVENTION LAB AND FMX FLIGHT SIM**  
WEEKENDS 11AM - 2PM

**DRONE PLEX**  
WEEKENDS 1PM - 4PM



## SANTA CLAUS ARRIVES BY HELICOPTER—EARLY THIS YEAR!

**NOVEMBER 25 • 10:30AM**  
**RAIN OR SHINE.**  
**DOORS OPEN AT 9:45**

Join the West Bay Community Band and sing Christmas carols while the kids line up to tell Santa their Christmas gift list. Santa will be at the Museum between 10:30AM and 12:30PM before he heads back to the North Pole!

**FREE EVENT.**



# Hiller Aviation Museum



German  
Food  
Brews  
Music  
and  
More!

**PENINSULA  
OKTOBERFEST**  
**SATURDAY OCT. 14**  
**5:00PM - 10:00PM**



Discount Tickets  
Available On-line

**Eventbrite**

Hiller Aviation Museum 601 Skyway Rd, San Carlos  
(650) 654-0200 \* [www.hiller.org](http://www.hiller.org)

## PENINSULA OKTOBERFEST!

**SATURDAY, OCTOBER 14**  
**NEW HOURS: 5PM - 10PM**



Oktoberfest is at hand! Over two hundred years after Crown Prince Ludwig and Princess Therese of Saxony-Hildburghausen wed, the Hiller Aviation Museum joins the celebration with a special Oktoberfest beer, music and dining event on **Saturday evening, October 14.**

In honor of the great festival held in Munich each year, the Peninsula Oktoberfest will pour:

### MICROBREWS AND SEASONAL BEERS:

**German Beers:**  
Hofbrau Oktoberfest, Hofbrau HEFE, Weltenburg Dunkel, Anders VolBier, Stiegle Radler, Fruh Kolsch

### Great Microbrews and Seasonal Beers from:

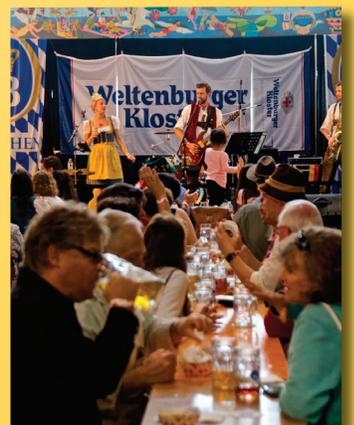
Devil's Canyon, Uncommon Brewers, Anchor Brewing  
German food by Little Red Riding Truck will be available for separate purchase. Plenty of sausages, bratwurst and sauerkraut

Two bands, the San Mateo Elks Oktoberfest Band and the return of Bayern Maiden, The Rockin' Oktoberfest Band, playing the hits directly from the tents in Munich.

Museum admission required to enter the event. Beer glasses (required for drink purchases) \$5/each (or you

can bring your own glass, 16oz pours). Oktoberfest brews available for \$5/pour. Discount tickets available on Eventbrite [www.hiller.org](http://www.hiller.org) The museum admission fee is free for museum members to the event.

**EVENT WILL BE HELD  
RAIN OR SHINE**





# HILLER AVIATION MUSEUM

601 Skyway Road, San Carlos, California 94070 [www.hiller.org](http://www.hiller.org)

Non - Profit  
Organization  
US POSTAGE PAID  
San Carlos, CA  
PERMIT No. 96

## Halloween Costumes

Be an Aviator,  
pioneer  
airline pilot  
fighter pilot  
or astronaut



Suit up in  
the Gift Shop!

**GREAT PLACE  
TO GET THAT  
HARD-TO-FIND  
AVIATION-  
RELATED  
HALLOWEEN  
COSTUME.**

## Join Now!

### Senior (age 65+) \$50

Unlimited admission for you + 2 guest passes.

### Individual \$65

Unlimited admission for you + 2 guest passes.

### Family \$90

Unlimited admission for 2 named adults  
and up to 4 children (17 & under) +  
discounts on Aviation Camp.

### Pioneer \$125

Family Membership benefits + an  
additional card for a named member (ideal  
for caregivers) and 2 guest passes.

### Pilot \$275

Family Membership benefits with a total of  
3 guest passes + 8 FMX Flight Simulator  
passes and 50% off additional FMX tickets.

### Barnstormer \$550 • Adventurer \$1,000

Pilot Membership benefits with a total of  
4 guest passes + 10% off Museum Rental  
and Birthday Parties.

### Explorer \$2,500 • Navigator \$5,000

Pilot Membership benefits with a total of  
8 guest passes + 15% off Museum Rental  
and Birthday Parties.

### Aviator \$10,000

Pilot Membership benefits with a total of  
12 guest passes + 25% off Museum  
Rental and Birthday Parties and a  
Hiller Aviation Museum jacket.

## Annual Membership Application

Or join online at [www.hiller.org/member](http://www.hiller.org/member)

### I want to be a member of Hiller Aviation Museum in the following category:

- |                                            |                                             |
|--------------------------------------------|---------------------------------------------|
| <input type="checkbox"/> Senior (65+) \$50 | <input type="checkbox"/> Barnstormer \$550  |
| <input type="checkbox"/> Individual \$65   | <input type="checkbox"/> Adventurer \$1,000 |
| <input type="checkbox"/> Family \$90       | <input type="checkbox"/> Explorer \$2,500   |
| <input type="checkbox"/> Pioneer \$125     | <input type="checkbox"/> Navigator \$5,000  |
| <input type="checkbox"/> Pilot \$275       | <input type="checkbox"/> Aviator \$10,000   |

- New Member     Annual Renewal

Primary Adult Member: \_\_\_\_\_

Second Adult Member: \_\_\_\_\_

*(Family Memberships and up)*

Third Adult Member: \_\_\_\_\_

*(Pioneer Memberships only)*

Address: \_\_\_\_\_ City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_ Daytime Phone: \_\_\_\_\_

Email: \_\_\_\_\_

This is a gift membership from: \_\_\_\_\_

Payment Amount: \_\_\_\_\_  VISA     MC     AMEX

Card #: \_\_\_\_\_ Exp. Date: \_\_\_\_\_

CSC: \_\_\_\_\_ Print Name on Card: \_\_\_\_\_

Signature \_\_\_\_\_

**Thank you for your support.**

Please make checks payable to  
Hiller Aviation Museum  
601 Skyway Rd, San Carlos, CA 94070

