



## Biplane Parts

Painting of Shorts Folder by Bob Arko, based on an original painting by Tom Freeman.

### Biplane Anatomy

by Merrill Anderson

Every now and then, I need to explain myself when using the technical names for biplane structures and details. So, although most of you know most or all of it, for those who don't know, or only think you know, here's a list of proper names for parts generally only found on biplanes:

**STRUTS:**      Interplane Struts:

The struts between the wings (planes)

Cabane Struts: The struts between the fuselage and wings, (usually the upper wing) (although some aircraft like the Bristol fighter have lower cabanes connecting the fuselage to the lower wing).

Vee Struts: The early Nieuport fighters and the Albatros D III and DV, had 'V' shaped interplane struts, this usually meant that the lower wing had only one main spar.

"N" Struts: Used on the

Fokker DVII, they are interplane struts that look like slanted N's. Stronger and simpler than separate struts, they were widely used after 1918.

**SESQUIPLANE:** Literally this means 'wing and a half'. Generally it meant one wing, usually the lower one, was smaller in length and or cord, from the other one, usually called the main plane.

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**Secretary**, Bernie Kugel

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## TCAH This Month

The monthly meeting will be held Saturday January 12, at Fleming Field, South St. Paul, beginning at 1:30 pm. Vendor baiting will begin about 12:30, so come early.

Picture your model here! Send me a photo of your model, and it'll be used to fill these little white spaces at the ends of the columns.

## GENERAL MEETING MINUTES – January 2008

We started our meeting at 1:30pm. Our new Pres. Bob Maderich called to order. There were no new members or guest. Steve Jantscher gave his Tres. Report. Our vendors gave their reports. Sean Brzozowski has asked for ideas from the members of what they would like to see added or changed on the website. Winston gave an update on the "Hope it Don't Snow" contest in Feb. at Rochester. Larry Donovan has taken over finding our monthly presentations. He is asking if anyone would like to share in showing their modeling talents by giving a demonstration or talking about their research. Please contact him. Rich Schmierer then hosted Show and Tell. George Mellinger gave a 30-minute talk on WWII Soviet camouflage. And then had a question and answer afterward. We then had a break.

After break we had nominations for our annual awards. For Modeler of the Year, noms are for Tom Norrbohm, Steve Jantscher, Sean Brzozowski, Kyle Nelson, Winston Vermilyea, and Bernard Kugel. Newsletter Article of the Year noms are Johan Allert for the MN WWI vets memorial, and Terry Love for Airline Chatter. Historian of the Year is put on hold this year due to lack of interest.

The Club has decided to make sure that club meetings start at 1:30pm. Nordicon 2008 is going to be at the North Aire Banquet Hall in Fridley on Sept. 27. More info to follow. Merrill Anderson has issued a challenge for the June 2008 meeting. "Ground Pounders" models of any type of bomber or attack aircraft. If it carries bombs or rockets it is acceptable. The meeting then adjourned.

## From the President

*by Bob Maderich*

Thanks to everyone for attending the December meeting. (Sorry about the "room mishap", but Bernie assures me it will not happen again). We got some decisions made about Nordicon, and the member awards. In January we need to vote on a theme for the 2008 show, (remember, think broad category, to encompass all subjects) and we also need to choose the members deserving of awards for 2007. Please come and vote on these subjects.

While reading the new Model Cars mag last week, I came upon an article by Bill Coulter. He interviewed 3 executives from major domestic model companies and asked them these 3 questions about the state of the hobby: 1) Where are we anyway? 2) How did we get here? 3) Is there a light at the end of the tunnel? Their answers were sobering, yet tinged with some optimism. I look out at the members of TCAH and am very thankful for young members like Fletcher and Kyle. Hopefully, we can attract some more youth into the hobby. Ummm... how that is done is quite another matter. Maybe a Revell, "Make and Take" at the 2008 Nordicon. Maybe just encouraging a young person you might meet to try a model. ( I recently lent a book on airplanes to a friend's son; he lent it to another kid, and lo and behold, that kid is now building planes.) So, it can be done.

Okay, enough of my preaching. But I would like to ask the membership to ponder the idea of how we can grow the hobby, and the state it is in right now. Send your ideas to Bob Arko and we can get an opinion page on this topic going in the newsletter.

See ya in January.



## Wad'cha Get?

by Larry Donovan

Ahh, the remembrances of Christmas' past....no, not the Dickens' kind with the spirits and all, but the pasts that I remember. Come with me down a trip to memory lane...by the way all ages are considered innocent until proven in the Cook Count (IL) Hall of records.

**1962** Excited as I was with the new bike (and training wheels!), I also received my first model for Christmas: Monogram's Duesenburg Torpedo Phaeton as I remember. Seemed like hundreds and hundreds of parts. Although I had started the "black art" the previous year or so, this seemed like a "specially" hard kit. I started building it the day after Christmas and gave up two days later as it did not have wings, guns, or a prop. Also could not understand why my 15 cent tube of Testor's would not attach the "silvery" parts together.

**1964** Ok, I skipped a year but there is so much to tell, I thought I would edit it down a little. This was the year I had contracted every childhood malady known to child-kind short of the whooping cough and the plague. BUT this was the year of my Monogram P-51D "show through" Mustang. I showed the box to my friend Tony that day; he had received a new fangled "Vac-U-Form" machine from Kenner. Gosh if he had not "one-upped" me again!

**1967** By now we had moved to the suburbs of Detroit and my new friends Jeff, Andy, and Chris had developed a tradition of coming over on the 26th and building until the 28th, then getting out green army men and playing "I conquer the world", or something like that. That was the year my grandparents gave me a "Short Sterling" four engined beast from a company I had never heard of: Airfix...from the side of the box and a leaflet contained within the box they were some company from Britain...they also advertised in the leaflet some

"cool" looking kits. By the way, Jay conquered the world that year...he had a BB gun, and felled my Sterling with some accurately placed rounds (DO NOT tell my Mom, she would say "we could have put an eye out with that thing").

**1970** We had moved back to Chicago two years previous. Yup 1968 was well known to the news savvy about some trouble with the "damned hippies" downtown, but I digress. 1970 was not so much a "model year", though I had received one, I cannot for the life of me remember what it was. No 1970 brought a Badger airbrush and two cans of propellant. I had read in **Scale Models** that you couldn't get better finishes without one of these contraptions. So I got out my 1/32 Revell Zero and went to town; armed with the airbrush and my Pactra Military colors. I completed it by the end of the holiday break.

**1974** By now I had acquired what we now term a stash; although back then "stash" had an entirely differently meaning. Mom and Dad were reluctant to give a new model "when you have so many you have not built". However my Dad caved in and we took a ride (an hour back then) to the Squadron Shop in Elmhurst; here I used my taschengeld to get the new Nichimo Nakajima Kate. Never built it, as I returned to college in January.

**2000-2001** Twenty six years would pass before I would really come back to the aforementioned "Black Art". In between, I would dabble in modeling here and there; however due to jobs and relocations, there never seemed to be time to stick with it. This year was different. My wife and I had gone to Duluth the previous summer. While there I had shopped some of the hobby stores looking for some wargames (I had an extensive collection but my mom sold them at a garage sale "to clean out the junk in the basement" ARRRGHH). At Hobbytown (mm, never heard of

them before) they had a bunch of Hasegawa kits on sale so I bought a couple. Then we went down to Carr's and the flood gates opened: They had a bunch of old Heller kits cheap cheap cheap. Bought four of them and **promised** the love of my life that I would build them all...she still uses that promise as leverage.

**2007** Good gosh how time flies, as we usher in the ghost of Christmas present. In the intervening years I have acquired (through various means) well nigh about a hundred kits in the "pending" pile, two airbrushes and compressors, and a stock of paints that would have made that Squadron shop in Elmhurst proud. I joined a model club, Twin City Aero Historians. I have met, through the club, some extremely talented modelers and historians, and more importantly, great friendships. I have entered contests, and while not winning many plaques and medals, have seen and spoken to some talented modelers who freely give me advice and put up with my queries "How did you do that?" with much patience.

## Wad'cha get?

On to a side note (two actually):

1. Still looking for a name for this column, although I rather fancy Hunting with Cheney

2. I need volunteers for our continuing speakers forums. These are to be short 20-30 minute presentations. I would like to have a balance of "historical" and "modeling technique" speakers. If you are interested please see me at the January meeting.

See you in January!



## Airline Chatter

by Terry Love

KLM ordered 3 more Boeing 737-800s and 2 more Boeing 777-300ERs. Deal is worth \$716 million. KLM presently has 15 Boeing 777s in operation.

KLM also ordered 2 more Airbus A-330s, bringing their total fleet to 12 of the Airbus A-330s.

Cambodia is forming a new national airline. No name at this time. Cambodia wants to advertise the country's growing tourism industry.

China will buy 110 Airbus A-320s and 50 Airbus A-330s. Deal is worth \$17 Billion. China will manufacturer part of the airliner order. Part of this huge deal, is that China will manufacturer at least 50% of the new Airbus A-350 airliner, plus cooperation on future projects.

Hawaiian Airlines ordered 6 Airbus A-330s and 6 Airbus A-350s as part of their expansion plans.

Delta Airlines flies to 104 countries with 479 world wide destinations. Delta has added more international capacity than any other US airline. Delta is the leader in the trans-Atlantic market.

Lion Air, the new low cost airline of Indonesia, ordered 22 Boeing 737-800s for \$1.7 Billion.

El Al airlines of Israel, ordered 4 more Boeing 737-800s for \$194 million due to strong demand for short-range flights from Tel Aviv.

Air Asia, the low cost airline, ordered 25 more Airbus A-320s.

Cathay Pacific of Hong Kong, ordered 8 Airbus A-330s for \$1.7 Billion.

Jet Airways, the low cost airline of India, ordered 5 more Airbus A-330s.

Boeing announced Babcock &

Brown Aircraft Leasing, ordered 20 Boeing 737-800s for \$1.5 Billion.

Lufthansa purchased 19% of Jet Blue, the American low cost airline. This is the first time that Lufthansa has made a move into the US market.

President Bush signed a bill that increases the mandatory retirement age of commercial airline pilots from 60 to 65 years of age. This is not retro-active.

Boeing sold to AWAS, an Irish based airline leasing company, 31 Boeing 737-800s worth \$2.3 Billion. 109 customers have ordered the Boeing 737-800 series. Over 4,300 have been sold. Unfilled orders of the 737-800 stand about 1,800 which is worth \$130 Billion.

Airbus delivered its 5,000th airliner on December 14 to Qantas Airlines of Australia. It was an Airbus A-330. Airbus delivered its first airliner, an Airbus A-300 to Air France in May of 1974. In 1993, Airbus delivered its 1,000th airliner, and its 2,000th in 1999. The 3,000th airliner was delivered in 2002, and in September 2005, the 4,000th airliner was delivered.

Orient Thai Airlines ordered 20 new airliners from Boeing. They confirmed 8 Boeing 787 Dreamliners, and 12 Boeing 737-800s for a cost of \$2.5 Billion.

Boeing marked the 50th anniversary of the first flight of the production 707. It was delivered to Pan Am.

Qantas ordered 31 Boeing 737-800s worth \$2.3 Billion. This order pushes the total Boeing orders over 1200 for the year 2007, to 2013.

Northwest Airlines operates 109 Douglas DC-9s with an average age of 35 years old. American Airlines has a fleet of 300 MD-80s (stretched DC-9s) that are getting old. The average age of airliners was 10.6 years at the end of 2002,

and it has risen to 12.2 years at the end of 2006. Most of the new airliners ordered are from non-US airlines.



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**WIRES:** Flying Wires : The wires that hold the wings 'down', usually these run from the lower fuselage to the upper wing. (Especially mid WWI and later these were usually doubled)

Landing wires: These hold the wing 'up', generally, these run from the upper fuselage (or the upper wing main spar, usually at the cabane mounting point) to the lower wing.

Control Wires: These are the wires connected to the control surfaces, Ailerons, Rudder, Elevators.

**CONTROL HORNS:** These are the triangular shaped bits protruding from control surfaces, attached to the control wires, They provide leverage, and are usually located at the pivot point of the surface.

**BIPLANE "BAYS":** This describes the number of sets of interplane struts along the wings, figured for 'one side', a two bay biplane has two sets of interplane struts for each side, a three bay has three sets. Most fighters and interwar biplanes have only one bay. BTW, the SPAD fighters are single bay, with queenposts, a patented idea, enough said.

**WING STAGGER:** This is common on biplanes, especially, sesquiplanes, and it means the leading edge of one wing, usually the upper, main plane, is ahead of the other in flight. On many, especially early planes, there is no stagger, the upper and lower planes are even. Negative stagger, where the upper plane is rearward of the lower one, as on the Sopwith Dolphin, is rare.



**Nodricon Update**  
by Bernie Kugel

Hello all,

This is Bernie Kugel, the new head chair for Nordicon. The membership of TCAH has approved the go ahead for Nordicon in 2008. It will be held at the North Aire Banquet Hall (Knights of Columbus) in Fridley on Sat. Sept 27, 2008. The room is 4000 square feet, much bigger than our last location. We have room for more vendors and contest space. The hall is located two blocks north of Mississippi Street on Central Ave. (If you remember where the old National Hobby Co. was, it is about half a mile north of there.)

In January, we will be deciding a theme for this year Nordicon. The ideas are:

- MN Guard Units
- Back to the 50's
- Moments in time
- Triathlon (building 3 models of different categories)
- Flops and Failures

To date, this contest will be an entrant judged show. That means if you enter a model, you will receive a ballot at registration to pick your choice of the top three models for both theme and regular entries. We do not have a head judge. If anyone wants to step up and take over the judging, we can have a judged contest. But for now it is an entrant judged show.

I am hoping that most of you that have volunteered for the past shows will continue to stay on with me. I am going to need your help and am hoping for more volunteers. Thank you for your help and understanding.

Bernie Kugel, TCAH Secretary  
Nordicon chair.



**The Airmen's Christmas**

*(How could we get through the season without a version of this! Thanks to George Mellinger for providing the words)*

'Twas the night before Christmas,  
and out on the ramp,  
Not an airplane was stirring, not  
even a Champ.  
The aircraft were fastened to tie-  
downs with care,  
In hopes that come morning, they  
all would be there.  
The fuel trucks were nestled, all  
snug in their spots,  
With gusts from two-forty at 39  
knots.  
I slumped at the fuel desk, now fi-  
nally caught up,  
And settled down comfortably, rest-  
ing my butt.  
When the radio lit up with noise and  
with chatter,  
I turned up the scanner to see what  
was the matter.  
A voice clearly heard over static  
and snow,  
Called for clearance to land at the  
airport below.  
He barked his transmission so lively  
and quick,  
I'd have sworn that the call sign he  
used was "St. Nick";  
I ran to the panel to turn up the  
lights,  
The better to welcome this magical  
flight.  
He called his position, no room for  
denial,  
"St. Nicholas One, turnin' left onto  
final."  
And what to my wondering eyes  
should appear,  
But a Rutan-built sleigh, with eight  
Rotax Reindeer!  
With vectors to final, down the  
glideslope he came,  
As he passed all fixes, he called  
them by name:  
"Now Ringo! Now Tolga! Now Trini  
and Bacun!  
On Comet! On Cupid!" What pills  
was he takin'?  
While controllers were sittin', and  
scratchin' their head,  
They phoned to my office, and I  
heard it with dread,  
The message they left was both ur-

gent and dour:  
"When Santa pulls in, have him  
please call the tower.  
"He landed like silk, with the sled  
runners sparking,  
Then I heard "Left at Charlie," and  
"Taxi to parking".  
He slowed to a taxi, turned off of  
three-oh  
And stopped on the ramp with a  
"Ho, ho-ho- ho..."  
He stepped out of the sleigh, but  
before he could talk,  
I ran out to meet him with my best  
set of chocks.  
His red helmet and goggles were  
covered with frost  
And his beard was all blackened  
from Reindeer exhaust.  
His breath smelled like peppermint,  
gone slightly stale,  
And he puffed on a pipe, but he did-  
n't inhale.  
His cheeks were all rosy and jiggled  
like jelly,  
His boots were as black as a crop  
duster's belly.  
He was chubby and plump, in his  
suit of bright red,  
And he asked me to "fill it, with hun-  
dred low- lead."  
He came dashing in from the snow-  
covered pump,  
I knew he was anxious for drainin'  
the sump.  
I spoke not a word, but went  
straight to my work,  
And I filled up the sleigh, but I  
spilled like a jerk.  
He came out of the restroom, and  
sighed in relief,  
Then he picked up a phone for a  
Flight Service brief.  
And I thought as he silently scribed  
in his log,  
These reindeer could land in an  
eighth-mile fog.  
He completed his pre-flight, from  
the front to the rear,  
Then he put on his headset, and I  
heard him yell, "Clear!"  
And laying a finger on his push-to-  
talk,  
He called up the tower for clear-  
ance and squawk.  
"Take taxiway Charlie, the  
southbound direction,  
Turn right three-two-zero at pilot's

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discretion.

"He sped down the runway, the

best of the best,

"Your traffic's a Grumman, inbound  
from the west.

"Then I heard him proclaim, as he  
climbed through the night,

"Merry Christmas to all! I have traf-  
fic in sight."



## Some Thoughts on the Battle of Midway, June 4-7 1942

by Merrill Anderson

Everyone knows the story, it was the "impossible" victory that 'turned the tide' in the Pacific. Signals intelligence, the breaking of the Japanese naval codes, made the critical difference. That's the usual story, with the addition of the sacrifice of the torpedo bomber squadrons. Torpedo Squadrons 3, 6, and 8, were wiped out (Torpedo 8, from the Yorktown, had only one survivor, Ens. George Gay). The Douglas SBD dive bomber is the 'hero' of the day, sinking four of Japan's first line carriers, killing many of their best pilots and aircrew.

Historically, the Battle of Midway is considered one of the ten most crucial battles in history, (all of it!). The courage of the U.S. aircrew involved cannot be overstated. Barely six months into the war, flying (mostly) obsolete aircraft, they pressed home attacks against a highly experienced, better equipped and numerically superior force.

The 'unsung heroes' of the day were the PBY Catalinas that found and tracked the Japanese fleet, (and later rescued many of the downed aircrew). Also unappreciated are the attacks from the land-based bombers, B-17's, B-26's, Marine Dauntless and Vindicator dive bombers, and the then brand new TBF Avenger. Although they scored no hits on the Japanese fleet, they were responsible for delaying Japanese action (while their fleet

dodged bombs and torpedoes), and resulted in the fateful decision by Admiral Nagumo to reload his reserve aircraft with ground attack bombs, to mount a second attack on Midway.

The 'goats' of the battle, were the TBD Devastator, and the F2A Buffalo. Of the 41 Devastators launched, 38 were lost. All of the Buffaloes defending Midway were shot down. Both aircraft deserve more respect than they get. The Buffaloes were badly outclassed and outnumbered, and the Zero fighters they faced were flown by the experienced elite of the IJN. The Devastator was known to be obsolete, (despite fair performances in the early raids and the Battle of the Coral Sea) and due to be replaced by the Avenger, even before the battle developed. Both aircraft had only been in service since 1938 (for the Devastator) and 1939 (for the Buffalo) and were the 'first generation' monoplanes for their classes. Both were 'victims' of the explosion of aircraft technology and engine power that occurred as they entered service. In 1937, aircraft engines developed in the range of 1,000 horsepower; by 1941, engines were developed that were in the 2,000 HP range, (by 1945 there were engines that could deliver over 3,000 HP). Both aircraft were underpowered by 1942 standards, and withdrawn from service following the battle.

Despite the equipment, the crucial differences in the opponents were psychological. The early successes of the war had made the Japanese, as a whole, overconfident (this did not extend to Admiral Yamamoto, but had affected his operations and planning staff). Japanese propaganda had made the Battle of the Coral Sea a major Japanese victory, rather than the tactical draw, and strategic defeat, that it is generally considered. This was part of a deep underestimation of American fighting skill and determination. An additional factor was the mindset of the Japanese naval

staff. Based on the Japanese interpretation of how a 'staff' worked, the naval staff had considerable authority, and although commanders could guide and override staff decisions, they often had surprisingly little control of operational plans. The Japanese staff had a tendency to design overly complex operations. The 'decoy' operations in the Aleutians, and the Midway force split into three groups made for a much weaker overall effort, violating the principle of war of mass, and inviting a classic "defeat in detail"; it was a mistake the Japanese Naval staff would repeat throughout the war.

The American attitude at Midway was one of grim determination. Everyone involved was committed to doing whatever it took to defeat the Japanese, at whatever the cost. The Americans were a mixture of professionals, who had endured the hard years of the 1920's and 30's, when the US military was tiny, largely ignored and nearly destitute, and the young, newly trained and inexperienced volunteers of the limited "hemisphere defense" mobilization. By any measure, however, this was a disciplined, dedicated and professional force. The legions of volunteers and draftees who would make up the massive forces that would ultimately fight and win the war, were, in June 1942, barely entering training.

Yamamoto's driving purpose in attacking Midway, was the destruction of the U.S. Fleet in a 'decisive' battle. The idea that a decisive naval battle could decide a war, had been a fixture in naval thinking since Alfred Thayer Mahan had published his book, "The Influence of Seapower Upon History" in 1890, and had been 'proved' (at least to the Japanese) by Admiral Togo at the Battle of Tsushima in 1905. It could be said, it was proven again by Admiral Spruance at Midway, but major wars in the 20th century were mass wars, with massive (mostly) conscript forces, and in-

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dustrial production was the true decisive factor; the US had the capacity to replace lost ships and planes fairly quickly, the Japanese could not. Strategically, the victory at Midway gave the US the time it needed to build the ships and planes (and train the men) that would eventually crush the Japanese navy completely. Tactically, it

crippled the *mobility* of Japanese naval airpower, allowing the US offensive in the Solomons, where attrition would largely complete the destruction of Japanese naval airpower begun at Midway.



The rare Goodyear F2G "Super" Corsair, photographed at the 2002 Air Expo at Flying Cloud Field.

## ON THE TABLE JANUARY 2008

| Modeler            | Manufacturer | Scale | Kit                      |
|--------------------|--------------|-------|--------------------------|
| Bernard Kugel      | Eduard       | 1/48  | Roland Walfish           |
| Bernard Kugel      | Roden        | 1/48  | Junkers D.1              |
| Mike Mishler       | 21st Century | 1/32  | Macchi 202c Folgore      |
| Eric Morningstar   | Trumpeter    | 1/48  | RA-5C Vigilante          |
| Kyle Nelson        | AFV Club     | 1/35  | M10 tank destroyer       |
| Kyle Nelson        | DML          | 1/35  | T-34                     |
| Tom Norrbohm       | Hasegawa     | 1/32  | FW-190A8/R2              |
| Bob Maderich       | AMT          | 1/24  | Grant King Sprinter      |
| Winston Vermiliyey | Tamiya       | 1/48  | Gekko Collection         |
| Winston Vermiliyey | Fine Molds   | 1/72  | Jango Fett's Slave 1     |
| Winston Vermiliyey | Fine Molds   | 1/72  | Star Wars Y-wing fighter |

## Directions to the Club Meeting Location

**Where: South St. Paul Municipal Airport, a.k.a. Fleming Field,** located on the southern extremity of South St. Paul, south of I-494, west of Concord Street and East of Highway 52.

### If coming from the western Twin Cities going east on 494:

- Exit at the 7th and 5th Avenue exit (Exit No.65)
- Turn right (South) on 7th Ave and go approximately .6 miles to a 4-way Stop sign. This is South Street W. To your left there will be a McDonald's; to your right front there will be a Walgreen's.
- Turn left (East) at the 4-way Stop onto
- South Street W and go approximately .6 miles. Along the way you will encounter three more Stop signs—the third Stop sign (Henry Avenue) will be a "T" intersection. At the "T" intersection on your left will be homes and on your right softball fields.
- Turn right (south) onto Henry Ave. and go approximately .2

miles toward the Fleming Field airport terminal building.

### If coming from east Twin Cities on westbound 494:

- Exit at the 7th and 5th Avenue exit (Exit No.65)
- Turn left (South) on 7th Ave and go approximately .6 miles to a 4-way Stop sign. This is South Street W. To your left front there will be a small strip mall; to your right there will be an Amoco station.
- Turn left (East) at the 4-way Stop onto
- South Street W and go approximately .4 miles. Along the way you will encounter two more Stop signs—the third Stop sign (Henry Avenue) will be a "T" intersection. At the "T" intersection on your left will be homes and on your right softball fields.
- Turn right (south) onto Henry Ave. and go approximately .2 miles toward the Fleming Field airport terminal building.

The terminal is on the right with parking available.

Twin City Aero Historian  
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Return address requested

The Aero Historian is published monthly by the Twin City Aero Historians, Inc., a joint chapter of the American Aviation Historical Society and International Plastic Modelers Society/USA, for members and readers as part of their annual dues or fees.

The group is open to aviation enthusiasts from teenagers on up who are interested in aviation modeling, photography, collecting, art and writing. For more information contact Ken Hornby at 651-552-0888

The Twin Cities Aero Historians (TCAH) meet the second Saturday of every month at 1:30pm.

See above for the new meeting locations and directions.

Mail Newsletter material and address changes to the treasurer.

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