



## B-57

by Frank Cuden

### Leduc 010

by Rick Koehnen

In 1913 an article appeared in "L'Aerophile" by an engineer named Rene Lorin proposing a "gas/jet propulser" in a plan for a "continuous-flux generator". Without giving specifics he was proposing a theoretical "statoreactor".

Rene Leduc graduated as an electrical engineer at 23 in 1921. After serving four years in the Army and several in the paper industry he found himself working for Breguet Aircraft. He advanced rapidly and

eventually was on the team that produced the all metal Breguet 27. During this time he began to study and develop mechanical theories earning his doctorate in 1929. All the while his interest in propulsion grew and in 1930 he patented his "pulsorreactor", a motor which ran by "interrupted flux". Realizing the limitations of what we know as a pulse-jet he took it one step farther and in 1933 presented a patent concerning thermo-propulsion.

Whether you call it a "thermopropulsion unit", a "continuous flux generator", a "statoreactor", or a "stove-pipe" the

aeronautical industry finally settled on athodyd (aero-thermo-dynamic-duct) with the more common term simply being ramjet. The ramjet is the simplest of all air breathing engines having no moving parts. It only requires fuel, ram air, and ignition. The down side is that it must have forward speed already to provide the ram air prior to ignition.

Lorin's work had included running a test rig atop an Opel truck. Leduc teamed up with M.J. Villey and built one in model form in 1935. Leduc then produced a working model at the Eiffel laboratory that

*(Continued on page 5)*

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## TCAH This Month

The monthly meeting will be held Saturday August 9, 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 – July 2008

Bob Maderich called the meeting at 1:15 pm on his new soapbox. Steve gave his treasurer report. Winston, Greg, and Axel gave their vendor reports. Larry updated us on upcoming events. Bernie gave a NordicCon update (we need vendors). Merrill's "Ground Pounder" contest is for August. We had Show-n-Tell. Rick Verner gave us a presentation of "Modeling on the Airways".



## From the President

by Bob Maderich

Well, it's time to start ramping up for another Nordicon and its all about change this year. A new venue, new judging procedure, and hopefully some new modelers from around the Midwest to help our show grow. I can see Nordicon becoming a top event in the Midwest modeling calendar, if we put in the time and effort, as a club, to make it happen.

So, this is your call to volunteer in some fashion at the show, whether it be set-up, tear down, or day of. All help is welcome. E-mail, our coordinator, Bernie and let him know what you want to do.

I recently shared a nice e-mail exchange with a fellow club member about his venture into a genre he hasn't done for a long time. This was great to hear, since over the last few years, I've dipped my toe into all kinds of new modeling subjects. I'm of the opinion, that one learns from the best in this club. I never say, "Mine could never look like that", I just try and soak up the techniques that will improve my own modeling skills. (figures are the last frontier, way too scary)

Not to ramble on too long about myself, but I really don't think I'm that different from other club members, what with our own insecurities

and the "tyranny of excellence" that tends to pervade this hobby, sometimes. So, stretch out, have some fun, and try something new.



## Airline Chatter

by Terry Love

United Airlines plans to lay off 950 pilots and 1600 salaried people. LOTS of flight attendants to follow. United Airlines presently has 6600 active pilots. Other airlines to follow with similar announcements.

Alaska Airlines will park all of their MD-80 airliners by August 25. Alaska Airlines has slowly been replacing their MD-80s with Boeing 737-800s. Alaska now has 107 Boeing 737-800s in their fleet.

Frontier Airlines is in bankruptcy. They will sell off 11 of their Airbus A-319s.

Singapore Airlines took delivery of their fifth Airbus A-380 super jumbo jet.

American Airlines will lay off about 8% of its work force. 900 flight attendants are the first to go, and pilots and mechanics are next.

Air Tran Airlines will cut every employee's wages by 10%. Next they will lay off 300 flight attendants, and 180 pilots on September 6 as the airline cuts its capacity to cope with high fuel prices.

Airbus will start to design a successor to the very popular, high selling Airbus A-320s series. First flight should be around the year 2014. They will optimistically be in service about 2018.. The question is - Now what will Boeing do?

Boeing builds them good!! How Good? Well, the U S Air Force says that its E-8C Joint Starts reconnaissance airframes are viable for fleet services beyond the year 2070! The

(Continued on page 3)

(Continued from page 2)

E-8C is the latest version of the Boeing 707. The Boeing 707 was designed in the early 1950s, first flew in 1954, and were produced until around 1990. So the design would be 120 years old in 2070!! A similar Boeing design is also still going strong. The Boeing B-52 was designed in the late 1940s, first flew in the early 1950s, and the last one built was in 1961. The U S Air Force plans to keep them around for at least another 10 years or so. By 2020, the design will be 70 years old!! Three generations of B-52 pilots have flown the B-52!!

U S Air will stop showing in-flight movies on all domestic flights. Savings will be about \$10 million per year.

Northwest Airlines announced that they will cut over 8% of their employee staff.

Eithad Airways placed one of the largest airliner orders ever, when they ordered 25 Airbus A-350s, 10 Airbus A-380 super jumbo airliners, and 20 Airbus A-320s - all worth \$11 Billion. Eithad also ordered 35 Boeing 787 Dreamliners and 10 Boeing 777s worth \$10 Billion.

Fly Dubai ordered 50 Boeing 737-800s worth about \$4 Billion.

Saudi Arabian Airlines ordered 8 Airbus A-330s worth \$1.6 Billion.

Air China ordered 15 Boeing 777s and 30 Boeing 737-800s. This is the largest order ever placed by any Chinese Airline. All orders go through the Chinese Communist government who actually placed the order.

Qatar Airways ordered 4 Airbus A-321s worth about \$360 million.

Note - All of the above orders were announced at the Farnborough International Airshow in England.

Midwest Airlines will cut 40% or

1200 employees by September due to high fuel prices. They will park 15 MD-80s and retain all of their Boeing 717s - the latest version of the DC-9.

Continental Airlines lost \$3 million in the second quarter of 2008.

American Airlines lost \$1.45 Billion in the second quarter of 2008.

Delta Airlines lost \$1 Billion in the second quarter of 2008.

American Airlines will park all 34 of their Airbus A-300s by next year. Again, it is due to high fuel prices.



### Upcoming from Osprey: a Preview

By George Mellinger

**Malta Spitfire Aces**, Aircraft of the Aces 83, by Steve Nichols, is due to be released in Britain in August and the United States in September. This book will tell the story of the few heroic and skilled spitfire pilots who were shipped out to defend Malta in 1942. The author of this new study has been able to examine previously unavailable archives and has corresponded with many of the remaining survivors.



I've spoken extensively with Steve and I assure you this book should be a revelation, or rather a string of revelations. He discusses not only the pilots, but also the airplanes, Spitfire by individual Spitfire, and corrects many myths about their camouflage and marking systems. Some reputations will be punctured as he reveals whose credited kills actually got home to Italy, and those which actually went down. Some other reputations, commonly assumed to be inflated turn out to be justified. Steve Nichols is a friend of our own Terry Love, so by extension he is one of us. But you probably want his boon even for its own sake. Coming in September!

### Il-2 Shturmovik Guards Units of World War 2, by Oleg Rastrenin, Osprey Combat Aircraft Series 71.

Reviewed by George Mellinger

From the time of my first Osprey book, began discussing a book of this type. I was uncomfortable since my focus has remained their air aces, and I wanted to complete my main aces books before tackling a ground attack subject. I was just reconciling myself that I would have to tackle the job, possibly next, when I learned that some introductions had paid off and Osprey had an agreement with a Russian. I could go back to my primary focus. And even better, they had contracted with Oleg Rastrenin! Urra!!!

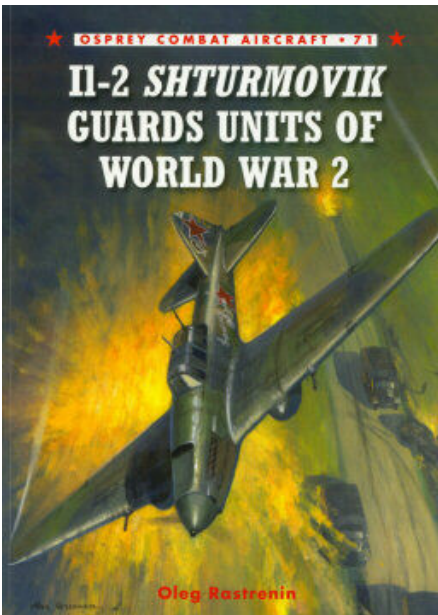
Oleg Rastrenin is far, far more qualified than I to write a Shturmovik book for Osprey. In fact, he is also more qualified than any living Russian. He has recently published a series of magazine articles in one of Russia's leading magazines and several books on the Shturmovik. Had I eventually written an Il-2 book, it would have been based primarily upon Rastrenin's work.

(Continued on page 4)



(Continued from page 3)

In the course of his book Rastrenin busts a number of popular Shturmovik myths including the idea that it was designed specifically as an anti-tank aircraft. It was a ground attack aircraft, and of course tanks are an important ground target. However, softskin trucks, artillery pieces, and other such targets were always the largest part of the Shturmovik's diet. It became a truly deadly tank killer only with the introduction of the PTAB 2.5 bomblet, about the time of the Battle of Kursk. If I could have one wish, Rastrenin might have given a little more attention to the 2.5 kg shaped-charge bomb which made the difference. And he also smashes the myth that the Il-2 customarily flew at grass level; that was only done in the early stages of the war or under unusual circumstances.



Most other sources show the Il-2 as finished with a darker, redder brown instead of the pale sand in this profile, but sadly the evidence today is very much by replication.

I also regret he did not decisively resolve the dispute about the Il-2's capability for air to air combat. Did the "flying tank" fly like a tank as some veterans recall, or was it

actually maneuverable and capable of holding its own in the hands of a skilled and aggressive pilot? But then the memoirists don't agree either.

Likewise, Rastrenin did not have the space to mention all the units, on all fronts, and at all stages of the war. You can cover only so much turf in 94 pages. As it is, he chose the most important encounters to give the reader an excellent perspective on the Il-2 Shturmovik and how it was used.

I was also concerned that this book might suffer from the bizarre translation and transliteration practices which afflict the Midland Counties books. Thankfully, that disease has not infected Osprey, and the technical translation is flawless, rendering this book delightfully readable. Few authors are happy to see a colleague get the contract they might have had. But this time, I am absolutely delighted. We need not await any more Shturmovik books, this is the authoritative treatment – unless Rastrenin decides to offer us a four hundred page hardback. Pretty please?



#### From the Vice President by Larry Donovan

Ahh, it is the hazy dog days of summer now! There is not a lot to report on from this end of the metro area (southeast St Paul); as some much needed time away from the *manse* was taken by your intrepid writer and his wonderful spouse. As is our usual summer escape we motored north to Duluth for **much** cooler air, fresher lake breezes, and some wonderful food. Of course any adventure up north means antique-ing with my lovely wife; we actually have a set number of stores into which we frequent. Unfortunately, like the local hobby shop, the number of these places are diminishing each year we go up north. Most of the times

## ANNOUNCEMENT

Former TCAH member Ellis Nelson is dealing with health problems, and is selling his collection of model kits and modeling magazines to raise money. He is graciously giving TCAH the first look at the collection. Here's a chance to help out a former member and also plug some holes in your own shelf of doom.

Bobbie Nelson is assembling the collection at his home in Lino Lakes. Bobbie's description of the materials is:

- Kits-a majority of American, British and Japanese
- Magazines-British, American and Japanese
- Some of the magazine collections run 30years +
- Many kits mint with plastic intact.
- All are in original boxes. I'm just guessing here...150+. Some very old. 1/72nd scale to the much larger ones.
- A lot of older reference books out of print; I'm guessing here as well.

Because of the quantity, Bobbie won't have a detailed list of what's there, and can't truck the whole thing down to one of our meetings. Bobbie's not a modeler, and so can't answer a lot of questions you might think to ask. What you can do, is call or e-mail Bobbie for a time to come to his home in Lino Lakes and look over the collection.

Bobbie's email is  
**mushroom\_486@msn.com**

Bobbie's phone number is  
**651-780-0196**  
after 7pm please.



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past these have yielded some "trinket" or two; one year was a Mattel Vac-U-Form machine, sans directions but in great shape; another year it could be a book or two. Rarely will a model kit be seen, and if so at an exorbitant price and usually missing pieces, directions, decals, or a combination. So imagine your VP's surprise and amazement when upon walking into Father Time Antiques, there in the front, stall number three, was a treasure trove of kits. Most were Airfix, Heller, and Revell that may have been late 1980s/early 1990s boxings; all very reasonably priced and with intact sprues/decals/instructions. And my wife was pleased, knowing that it takes her husband forever to make up his mind regarding a purchase (or two or three), she now has plenty of time to shop. So guys, when the significant other wants to go "antique-ing", do not just roll your eyes heavenward, follow along, you might come away with a kit (or five!).

Now do not forget Merrill's Ground Pounders Contest-the August Meeting will be the final judging...and don't forget that A4 Skyhawk Challenge Contest within a Contest. At the meeting, as Bob refers to in his notes, we will be talking about NordicCon briefly. This is also the meeting to rid your castle/starter home of those kits on the shelves of doom for the NordicCon raffle; think of it as spring cleaning in August! Bring kits, aftermarket, decals, books and just watch your humble abode look and feel trimmer and slimmer. And we can always use more volunteers to help with NordicCon, just see Bernie, Sean, or your local VP and we can get you going! See you at the meeting!



*(Continued from page 1)*

produced 8.8 pounds thrust at 984 ft/sec. Leduc began designing a futuristic aircraft to test a full size version of his engine but WWII interrupted his work and it had to wait until after the war.

Meanwhile in Germany Dr. Otto Pabst and Dr. Eugen Saenger were also developing Lorin and Leduc's proposals and by wars end units were being tested atop bombers that were 20' long and developing 20,000 hp. Messerschmitt proposed two units mounted above the wing of an Me262. These units were to each be 19' long and would propel the Me262 at 621 mph. The Germans named this version of the Me262 the Lorin (Lorin engines are available in kit 2-12).

In the immediate post-war era, the French aviation industry wasted no time in capitalizing on Leduc's proposals. Known as the Leduc 010, the aircraft was built at the Breguet plant at Toulouse. It was a very clean all metal design consisting of a cigar shaped double skinned fuselage with the inner skin serving as the combustion chamber. Within the intake was a two man cockpit with a clear nose piece and six viewing ports, two on each side and one on top and underneath. Directly behind the cockpit was a gas turbine unit driving the fuel pump. These appear to be mounted on the carry through wing spar, behind which was a large set of five cylindrical ducts of increasing sizes in which there were 500 burners or igniters mounted. Because the crew would have to pass through the intake to get out of the aircraft the entire fuselage forward of the wing was designed to be jettisoned and land via parachute. The only portion of the design that dated the project was the rounded shape of the tail surfaces.

On 21 October, 1947, the Leduc 010 made its first non-powered flight mounted on the top of a four engined Languedoc S.E.161 taking off from Francazal Airport, Tou-

louse. Monsieur Gonord piloted the 010 from the 10,000' release altitude. At the time of release, the S.E.161 would nose over and hold 174 knots (200 mph), allowing the 010 to smoothly lift off when released. A number of glider flights were completed, with the first powered flight being made on May 31, 1949. Again Gonord was the pilot and launched off the S.E.161 but only flew for 12 min. reaching 366 knots (422 mph). Several other flights were made reaching over 36,000' and over 500 mph, still only using half power. It was planned to display the aircraft at Orly for the 1949 Paris Salon but instead it was sent to Britigny for modifications.

Two other aircraft were built, the second, 010.02 was identical to the first. Tests were suspended when on Nov. 27, 1951, at Istres it was destroyed. Jean Sarraill was the pilot and had reached Mach 0.75 when a sudden drop of pressurization occurred in the carburetor due to the rupture of a ball bearing, resulting in the engine blowing up. Sarraill was 30 km from the field and attempted a crash landing on the shore of the river Crav. The front fuselage separated from the aircraft on impact and bounced along the ground. Sarraill spent seven months in a hospital.

The third Leduc underwent a few basic modifications, and still had 010 on its tail but was known as the 016. The vertical fin was enlarged and squared off on top and a Turbomeca Maarbore turbojet of 660 pounds thrust was mounted on each wingtip. On January 15, 1952 it landed with one of the auxiliary jets on fire.

That summer on July 25, 1952, the first aircraft 010.01, was to be launched with Littoloff as pilot and Corriol as engineer. At 9:45 that morning, the Leduc was released and immediately made contact with the right wing of the S.E.161, then careened back into the triangular

*(Continued on page 6)*

(Continued from page 5)

brace and upper fuselage of the mother bird. The engineer was in contact with the two seat Meteor chase plane and when it became obviously hopeless they abandoned the aircraft (I assume they separated the forward fuselage but its not clear). The pilot was trapped in the wreckage and suffered spinal damage keeping him out for 11 months.

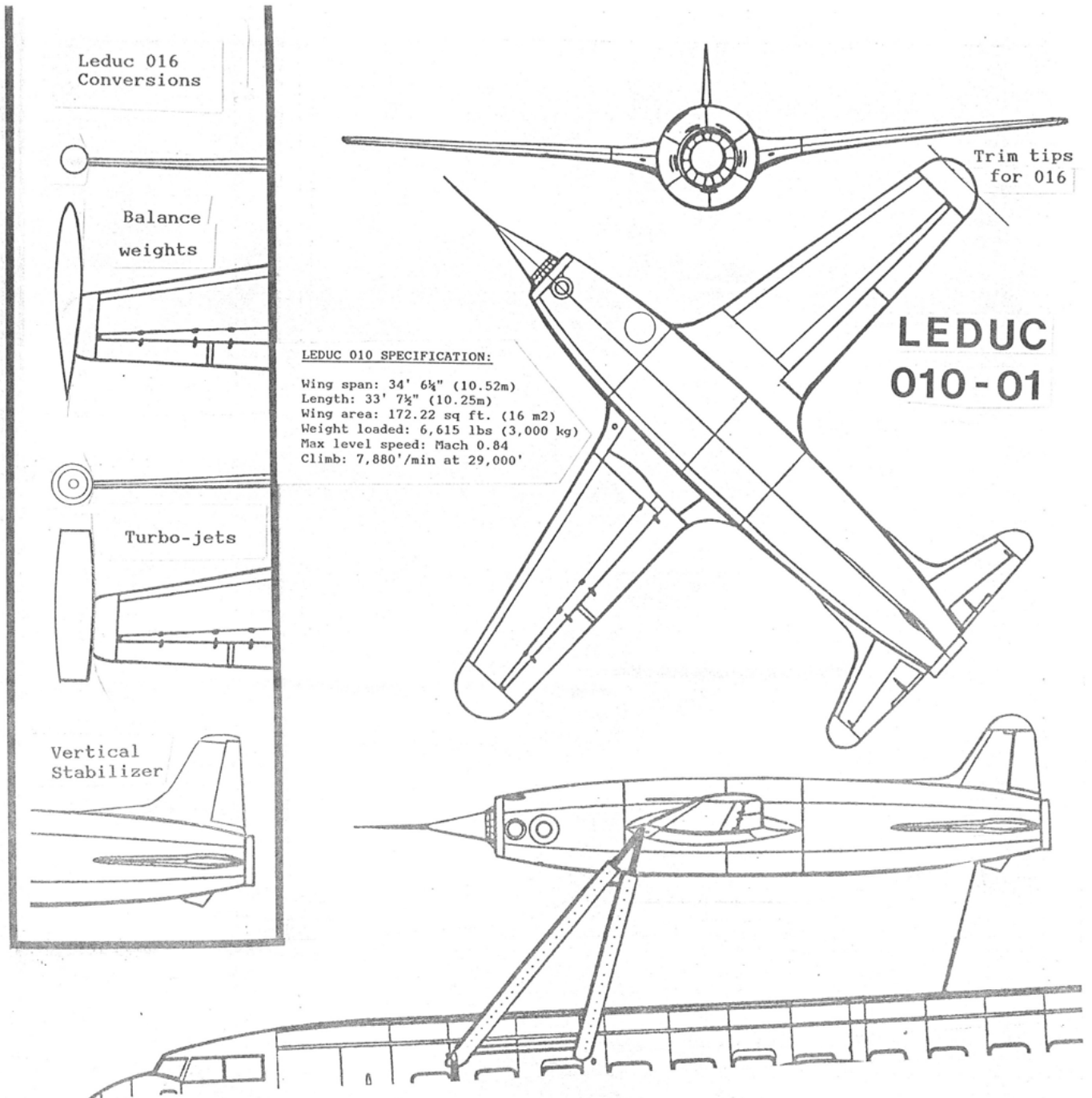
With the loss of both 010 proto-

types and the damage to the carrier S.E.161, the program slowed down. To replace the S.E.161 the sole prototype Heinkel He274 was pressed into service. The French had to reengine the prize at the end of the war and it was being used in various test roles at Bretigny. It had a similar split tail and four engine layout as the S.E.161, so was a perfect replacement. On Oct. 9, 1952, the He274 was attempting to launch the 016 when an engine seized. It was decided to retire the

He274 and it was scrapped. A second S.E.161 was recruited and modified. In June of 1953 though the 016 was modified. It was determined that the turbojets on the wing tips were too inadequate to be of benefit and were replaced with tear drop shaped balance weights. In spite of the many setbacks to prototypes, crews, and carrier aircraft, the 016 completed a total of 83 flights.

In May of 1953 a new version,

(Continued on page 7)



(Continued from page 6)

the Leduc 021 began flight tests. One third larger than the 010, it was much fatter and had a larger nose cone in which the complete cockpit was forward of the intake lip. Two were built, one being modified with a 836 pound thrust turbojet installed to assist on landings. These two were followed by the Leduc 022 which was nearly 56 feet long and designed for Mach 2 at 66,000 feet. The 022 first flew the day after Christmas of 1956. It was unique in that it had a Atar D.3 turbojet of 6,600 pounds thrust which gave it the capability of taking off on its own power. By Spring of 1957 it had completed 30 successful flights with the Atar. Like developments in so many countries at the time, the entire program was terminated in the military cuts of 1957. So ended the Leduc series of ramjet aircraft.

The surviving 016 and 022 are displayed at the Air Museum at Le

Bourget.

**REFERENCES:** Today you can find more information on most of the German, Russian and Japanese research aircraft in English publications than you can of any French types. Even though they have had many cutting edge technological types, there is little that has been translated into English references. The English publications listed below at best, offer a general history in a single paragraph, a photo or two, and only one 3-view. I wish to thank a fellow French modeler for sending me some copies of French articles and to another fellow modelers wife, Karen Martin, who provided me with a general translation. .

Chronicles of Aviation, 1990.  
One paragraph and inflight photo of gear down in landing configuration.

Flight, 22 December, 1949. Se-

quence of 11 photos and text showing both the S.O. M. 1 and Leduc 010 in separation sequences from the Languedoc S.E. 161.

Janes Pocket Book of Research and Experimental Aircraft, John Taylor, 1976, McMillian Pub. Short history and photo of both 010 and 021.

Jets and Missiles, Andy Bili-movich, 1957, Trend Books. Single page history of all three types.

The Jet Aircraft of the World, Wm. Green & Roy Cross, 1956, Hanover House. History, two photos and three view of both 010 and 021.



## ON THE TABLE July 2008

Name	Model	Scale	Manufacturer
Bernard Kugel	USS Franklin CV-13	1/700	Trumpeter
“” “”	USS Saratoga CV-3	1/700	Fujimi
“” “”	USS Juneau	1/700	DML
Mark Jacques	B-26F/G Marauder	1/72	Hasegawa
Steve Hustad	Opel Blitz Dio	1/72	Roden, Prieser
Steve Macey	F-8J Crusader	1/72	Academy
“” “”	Saab Drakken	1/48	Hasegawa
Bob Maderich	Type VII/D U-boat	1/144	Revell
“” “”	Jaguar SS-100	1/32	Tomy
“” “”	Tiger I	1/48	AFV Club
John Bernier	P-51B	1/144	Sweet
Rick Verner	A-4 Skyhawk (2)	1/48	Monogram
Winston Vermilyea	F-16 Cockpit	1/32	Tamiya
“” “”	Saab Drakken	1/48	Hasegawa
“” “”	Akago Autogyro	1/72	Fine Molds
Ariana Vermilyea (age 4)	Kuragane staff car	1/48	Tamiya
“” “”	P-47 Thunderbolt	1/72	HobbyBoss
Steve Erickson	Spitfire mk IX	1/48	Italeri
“” “”	Polikarpov I-16	1/48	Eduard
Mikael Kuokkanen	A-7 Corsair	1/100	Tamiya
Fletcher Warren	Pz IV F2	1/35	DML



## 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  
**Rick Schmierer**  
 1852 E. 39 Street  
 Minneapolis, MN 55407

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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