Stunt News

Precision Aerobatics Model Pilot's Association

Special Issue 2009 $5.00

AMA SINCE 1936

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Special Issue 2009

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On the cover: John Callentine is a fine woodworker by trade … is anyone surprised? Here he takes a moment to pose at last year's VSC with his Caprice. This is the third one he's built and he has come up with some clever fixtures and procedures to make building them faster and more repeatable. Among his innovations is a technique for making absolutely exquisite molded wing tips. We asked John to share his technique with us and he has responded with a fantastic "how-to" article that takes us step-by-step through the process. Photo courtesy of Deb Hudson.

Above: Frank McMillan's Super Caudron series of stunters have been extremely successful for him in national competition with many Top 10 and Top 5 finishes. Here he poses with the fifth version out of nine that have been built so far. The story of the Caudron series makes for very interesting reading and it is presented in these pages in this Special Issue! Photo courtesy of Frank McMillan.

PAMPA, an AMA approved Special Interest Group, founded July 1973. Objectives include a means of communications among Control Line Stunt fliers, voting on issues affecting Control Line Stunt, and administration of the Control Line Precision Aerobatics Event at the Nats.

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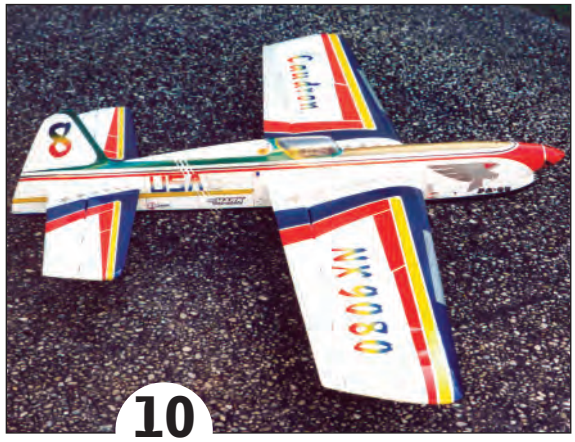

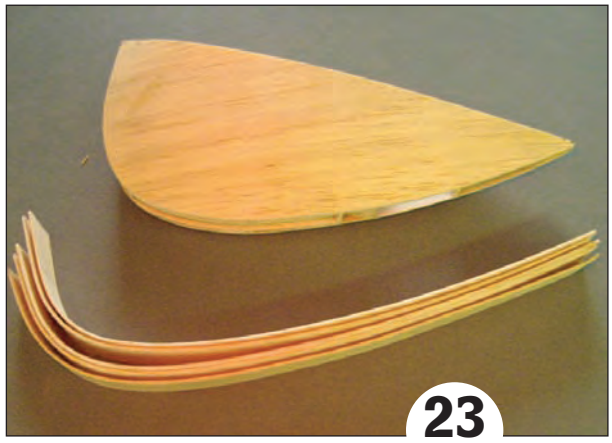

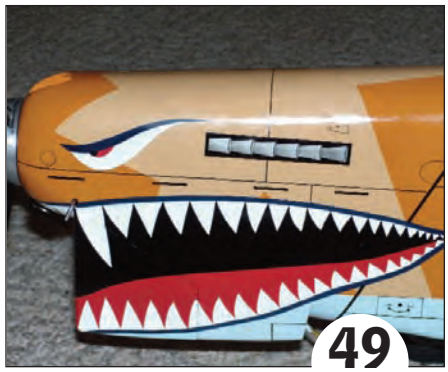

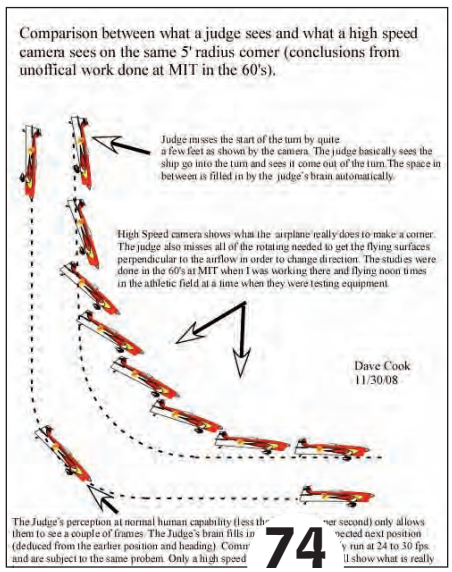

President's Column

By Bill Rich

For the year-ending Special Issue, I asked our Historian, Wynn Paul, to contribute a "History of PAMPA." This has appeared in the past, but I felt it would be a good time to revisit our founding.

Precision Aerobatics Model Pilots Association
A History of the Organization
First Write - 10/9/86
Prepared by Wynn Paul

At a Control Line contest in Dayton, Ohio, in September of 1972, Keith Trostle and Wynn Paul discussed the need for some sort of organization, composed of Control Line Precision Aerobatics enthusiasts, designed to promote and protect the event. Trostle was a longtime modeler who had competed in Free Flight, Control Line Scale and Stunt (he was the Walker Trophy winner in 1970), and Wynn had been a Control Line flier since 1962, competing in the Nationals for the first time in 1971.

In view of the fact that in 1972 the Navy had concluded its 25-year association with AMA in supplying personnel and equipment to run the Nationals, it was apparent that the various events would have to look out for themselves in terms of administration of the annual event. Other items of concern were (1) the need for a voice for Stunt fliers to deal with the AMA, (2) the need for a medium in which to exchange information other than the small coverage in the current airplane magazines, (3) address the large number of complaints regarding all phases of the administration of the Nationals for the past few years.

It was recognized that at the time the Free Flight fliers had the National Free Flight Society, an organization that greatly benefited Free Flight enthusiasts, and they put out an outstanding newsletter.

Many telephone conversations and letters were exchanged between Keith and Wynn over the winter of 1972-1973 regarding the formation of a Stunt organization. During that winter Keith was transferred to the Washington, D.C. area which would give the Stunt world a person living near the (then) AMA Headquarters. In early July, 1973 Wynn Paul put together a three-page newsletter, written on a spirit duplicator, called Prop Wash. The newsletter was sent to 45 Stunt fliers around the USA. The newsletter pointed out the need for an organization to deal with the above mentioned items.

A general meeting was held on a Friday night in August, 1973, in front of the work hangar at the Nationals in Oshkosh, Wisconsin. About 45 Stunt fliers attended that meeting. The consensus was to form an association, publish a newsletter, charge dues for members, make the AMA District Vice Presidents and the Control Line Contest Board aware of the group's feelings, and compile a list of Stunt judges from around the country that could work at the Nationals and FAI Team Trials.

Keith Trostle, who was unable to attend that year's Nationals, was named the President of the organization by acclamation as he had volunteered to serve as the director. Les McDonald was nominated and elected as Vice President. He would later state that he was nominated because he had a driver's license and a telephone! That was before the world took notice of Les McDonald as three-time World Champion and a Walker Trophy winner. Wynn Paul was named the newsletter editor and Secretary/Treasurer by acclamation.

Dues were set at $5.00 per year. A vote favored the organization being named Precision Aerobatic Pilots Association. A second meeting was planned to be held at the FAI Team Trials in September in St. Louis.

By the time the second issue of the newsletter was published, in August, 1973, Editor Wynn Paul had switched to a mimeograph format, and that format would continue for a total of 91 issues ending in July, 1983. And, the second issue of the newsletter was officially given the name *Stunt News,* which would soon be distributed not only in the USA, but in many other countries as well. The second newsletter contained a questionnaire which, among other items, listed 7 proposed names for the organization.

The FAI Team Trials for F2B (Control Line Precision Aerobatics) was held in St. Louis, Missouri, over Labor Day weekend. The Event Director was Art Schaeffer, the Assistant Director was Jerry Phelps and the judges included PAMPA President Keith Trostle. Phelps (a two-time USA team member) was also a judge.

A second meeting of the Stunt pilots was held in St. Louis regarding the new organization. The word *Model* was added to the name Precision Aerobatics Pilots Association, which was the choice of 89% of the respondents to the questionnaire sent to the members. And thus the name of the organization and the name of the newsletter for the special interest group were set for the future.

In the December, 1973 issue of *Stunt News,* editor Wynn Paul called for the inclusion of different skill levels for all local contests, ie: Beginner, Intermediate, Advanced and Expert. This skill level plan had been used by the Western Associated Modelers (WAM) organization for some time and had proved to be popular. The "PAMPA Classes" began to catch on and by the 1980s was used at most all contests around the country. As the 1974 Stunt season commenced, PAMPA had 123 paid-up members.

The 1974 Nationals in Lake Charles, Louisiana, had President Keith Trostle as Event Director for Precision Aerobatics. His leadership made the Nationals a more enjoyable experience for pilots and officials. Frank McMillan was the Assistant Event Director. Twelve Open fliers were seeded onto three circles based on previous Nationals and FAI Team Trials results. It is not clear how long it had been since some sort of seeding process had been used at the Nationals, but veterans said that it had been a long time. Three circles had been used in 1972, two circles in 1971 and 1973. Previous to 1971 it is unclear how many circles had been used, as records were buried deep in the boxes of Nationals' paper work that was stored at AMA Headquarters.

The 1974 Nationals also saw the first

instance of "PAMPA Tours," as a group of rooms were reserved in advance for members. And, the first PAMPA banquet was held at the Picadilly Cafeteria, with over 100 people attending. AMA President, Johnny Clemens, took time out from two other engagements to make a brief speech and award the Stunt trophies. Keith Trostle was elected President for another term. Also in 1974 PAMPA was recognized by the AMA as a Special Interest Group.

Keith was also Event Director for the 1975 Nationals and Bart Klapinski (National Champion and Walker Trophy winner-1967) was the Assistant Event Director. Again, there were three circles for Open qualifying with 12 fliers seeded, four on each circle. There were 58 open entries.

The 1975 FAI Team Trials for F2B (Precision Aerobatics) was held in Dayton, Ohio, at a site that was adjacent to the Dayton Electric Power Company. Keith Trostle served as Event Director.

At the 1976 Nationals, Bart Klapinski was the Event Director and he had help from Assistant Director, Dayton resident, Jim Fasimpaur. There were 74 entrants in Open Stunt that year! Four circles were used for qualifying with the top five from each circle advancing to the Finals on Saturday. A number of fliers expressed concern that their "Nationals experience" consisted of only two official flights. Only the 20 finalists got the added experience of three official flights on Saturday. Bob Hunt won the Open Stunt event at that Nats along with the Walker Trophy.

Half-A Stunt was added as an unofficial event and there were 26 entries. There is a wonderful picture of Californians Bob Whitely and Jim Armour kneeling in pouring rain trying to start Bob's 1/2A plane; Armour has on a serapé and they are both drenched!

At the 1976 Nationals a meeting was held in the motel room of President Keith Trostle and those present included Bob Gialdini, Gene Schaffer, Al Rabe, Bob Gieseke, Les McDonald, Bill Werwage, Bob Hunt, Bill Simons and Wynn Paul. The topic was how to make the Nationals a better experience for all entrants and still pick a National Champion.

After the 1976 Nationals, the PAMPA group voted to radically change the format of the Nationals. This was accepted by the AMA and the two-day qualification/Top 20 day/Final Top Five fly-off format was put into effect for the 1977 Nationals in Riverside, California. Upon the recommendation by Keith Trostle, a Concours d'Elegance award for the most beautiful Stunt plane, as voted by the pilots, was instituted at the 1977 Nationals.

The Concours would become a popular part of Nationals week from that point on. And 1977 Event Director Arlie Preszler instituted a new format for appearance judging whereby on Tuesday afternoon all planes were placed in rows according to points awarded by the officials. This got the tiresome and often lengthy process over in one short afternoon. This procedure would also become one of the popular events during Nationals week.

At the 1977 Nationals in Riverside, California, Arlie Preszler and Assistant Lanny Shorts welcomed 51 Open fliers. Four circles were used for Open qualifications with five from each circle advancing to a semifinals or Top 20 day on Friday, and then five were selected to go to the Finals on Saturday.

Old Time Stunt was held as an unofficial event for the first time with two entries in Ignition and three entries in Glow. Ted Fancher won the first ever Concours d'Elegance award and veteran flier Roger Barrett sponsored an award for the highest-placing, first-time qualifier. This award became known as the "Rookie of the Year." Norm Whittle was the first official Rookie of the Year. He placed ninth. Al Rabe won the Open Division and the Walker Trophy.

Keith Trostle served as the PAMPA President from 1973 until 1979 and saw the organization grow to nearly 400 members. Recognized by the AMA, staffing the Nationals and FAI Team Trials through the leadership of PAMPA, publishing a newsletter, pushing to get four classes of competition in local contests (Beginner, Intermediate, Advanced and Expert), and creating a Nationals organization and judges guide, the PAMPA organization became a model for other Special Interest Groups to emulate.

By 1980 many of the contests reported in *Stunt News* were using the four PAMPA skill levels of Beginner, Intermediate, Advanced and Expert. For instance, PAMPA skill levels were reported at Houston, Texas; Braintree, Massachusetts; Winston-Salem, North Carolina; Lincoln Park, New Jersey; Cincinnati, Ohio; Detroit, Michigan; New Orleans, Louisiana; Washington State; Buckeye, Arizona; Portland, Oregon; and the King Orange Internationals in Jacksonville, Florida. The skill level program, as championed by *Stunt News* Editor Wynn Paul and many others, had certainly caught on and was popular.

Arlie Preszler, of Lodi, California, became the second President of PAMPA as elected at the Nationals in 1981 in Seguin, Texas. Outgoing President Keith Trostle was presented a complete Uni-Mat lathe by PAMPA for his outstanding eight years as the leader of the Stunt group. However, Keith was not turned out to pasture; he was elected Vice President.

By 1983, PAMPA co-founder Wynn Paul was still responsible for a monthly *Stunt News* (which included everything from retyping each submission onto a stencil for mimeograph, printing, collating, labels, stamps, and keeping up with membership dues), the monthly column in *Model Aviation,* serving as secretary/treasurer for PAMPA, and had been competing at the Nationals and the FAI Team Trials every year since 1971, finishing in the Top Five on four occasions. In addition, as Head Varsity Coach for a Division I swimming, diving and water polo team at the University of Kentucky, he learned in early 1983 that the University was going to add a full women's team to the varsity program in the fall of 1983 and that he would assume the leadership of this additional program. Something had to give, and Wynn withdrew from both *Stunt News* and the *Model Aviation* column.

Dennis Adamisin was selected as the President of PAMPA at the 1983 Nationals. Dennis was the Walker Trophy winner in 1972 as a Senior division flier and is a part of a family that includes five Stunt fliers! Outgoing President Arlie Preszler managed to convince Windy Urtnowski, of Little Ferry, New Jersey, who was writing the Stunt column for *Flying Models* at the time, to assume the duties of newsletter editor. Unofficially renamed *Pro Stunt News,* Windy began publication in January 1984, assisted by Doug and Mary Figgs, with a 26-page newsletter that included information, cartoons, drawings, pictures and happy faces. Publication was enhanced by the use of the then-new word processing programs and computers in the early days of desktop publishing and fast copiers. Windy published 29 issues of *Pro Stunt News* over four-plus years.

Mike Keville took over the editorship in February 1989, and would remain in that post for three years. Mike restored the official publication name of the newsletter to *Stunt News*. George Higgins was the PAMPA President for 1986-1987.

Led by Jack Sheeks and Rolland McDonald, an Advanced category of

competition was added to the Nationals in 1987 at Lincoln, Nebraska. This was an unofficial event in the eyes of the AMA, but was immediately popular with the fliers. There were 36 entries in Open and 14 in Advanced, although both classes competed on the same four circles for qualifications.

Tom Dixon served as President of PAMPA in 1988-1989. As of December 1, 1988, there were 474 PAMPA members, as reported in the March/April 1989 issue of *Stunt News*.

In February of 1989, the first Vintage Stunt Championships was held at Whittier Narrows, California, as the project of Mike and JoAnn Keville. Events flown were Old Time Stunt and Nostalgia Stunt. Such luminaries as George Aldrich and Bob Palmer attended, along with many top-level current competitors. There were 19 entries in Old Time and 17 in Nostalgia. A good time was had by all and allegedly the focus was on having fun, not competition.

As PAMPA entered the 1990s, membership was back up to just over 500, the newsletter was being produced a regular basis once again, and Ted Fancher was the President.

The second Vintage Stunt Championships (1990) almost doubled in size as there were 27 entrants in Old Time and 32 in Nostalgia. The event was moved to Silverbell Park, in Tucson, Arizona.

The 1990 Nationals had 38 Open competitors, 28 in Advanced, 18 in Old Time, seven in 1/2A, and three each in Junior and Senior. The Nationals were held at Lawrenceville, Illinois, a site which was not popular with the fliers as it was quite rough.

At the 1991 Nationals two unofficial events were added to the growing program. Beginner Stunt was held with Ken Simmons as Event Director, and there were eight entries. Nostalgia Stunt was held with Warren Tiahrt as the Event Director, and there were 15 entries.

The PAMPA Hall of Fame was established in 1992 and four charter members were elected: George Aldrich, Bob Palmer, Jim Walker, and Wynn Paul.

And with the March/April 1993 issue of *Stunt News,* Tom Morris, of Anniston, Alabama, became the Editor/Publisher producing a 40-page newsletter. *Stunt News* would never be the same as Tom poured talent, initiative, new technology and hours of work into a publication. He expanded it to over 100 pages, added more photos than ever before and also added many color photos. The bi-monthly "magazine" became the absolute model for all other AMA Special Interest Groups.

Steve Buso served as President in 1994 and then resigned in March 1995 with Vice President Mike Keville assuming the leadership.

According to the January/February 1995 issue of *Stunt News* (which was 96 pages in length, of which 27 pages was the membership roster) membership in 1994 had started at 900 members and ended with approximately 1,200 (1,034 U.S. and 126 International). Over 500 newsletters were printed in 1994.

The 1996 Nationals was held for the first time at the new AMA permanent Headquarters in Muncie, Indiana. It took the AMA 50 years from the date of the first Nationals, which was held after World War II (1946), to arrive at a permanent site for events. It was certainly a welcome development for veteran competitors.

Frank McMillan was elected President in 1998. Frank was a longtime competitor, dating back to the 1950s in New York, and he had been writing the *Model Aviation* column since March, 1990. In 1998, the membership passed the 2,000 mark. Multiple color photos were added to *Stunt News* in 1998 beginning with the July/August issue. PAMPA ended the year 1998 with 2,200 members.

At the 1998 Nationals Intermediate Stunt was added as an unofficial event. Led by PAMPA member event directors, the Nationals was now a week-long event that included all four PAMPA classes of competition—Beginner, Intermediate, Advanced and Expert (Open)—as well as Old Time Stunt, Classic Stunt, and 1/2A Stunt. There was certainly something for everybody.

At the end of 1999 the PAMPA membership stood at approximately 2,000 US, with approximately 500 international members, as reported in the March/April issue of *Stunt News* 2000.

As Pampa entered the new millennium, the newsletter for January/February 2,000 contained 118 pages. PAMPA membership was around 2,500, as reported in the March/April issue of *Stunt News,* 2000. Frank McMillan was reelected as President for the 2000-2001 term.

At the 2001 PAMPA Annual Membership Meeting at the Nationals, Secretary/Treasurer Shareen Fancher announced that as of July 1, 2001, there were 2,148 members, which included 1,729 in the US and 419 international members. Frank McMillan served as PAMPA President for the 2002-2003 term.

In January of 2004, John Brodak took over as President of PAMPA. Tom Morris remained as the *Stunt News* Editor. Tom was assisted by 15-20 contributing editors, along with Will Hubin (Text Editor) and Ken Budensiek (Photo Editor).

Truly, over the years PAMPA has become the outstanding Special Interest Group within the AMA.

—Wynn Paul

Editor's Note: Obviously there has been more history of note concerning PAMPA since Wynn wrote this piece. Perhaps we can persuade Wynn to bring this piece up to date in a future issue. Certainly we all owe a great deal to Wynn for his vision of PAMPA back in 1972 and his steadfast dedication to the organization over the years. SN

Level Laps

By Bob Hunt

As you probably noticed, there is no cover date on this issue. This is a "Special Issue" of *Stunt News* that essentially catches us up for 2009 and completes the six issues for the year that our members are supposed to receive. If you remember, we had to skip the May/June issue in an attempt to bring *Stunt News* up to date. That goal is nearly achieved and we will be on schedule by the first issue of 2010.

Needless to say there were many things that came into play to put *Stunt News* behind schedule and there is no need to revisit all of them here. Just when we were almost caught up at one point during the year a freak accident left Liz Helms—our *Stunt News* layout person and graphic artist—incapacitated with a badly broken right arm. In fact there were two breaks, and both of them were very close to her arm/shoulder joint. I'm happy to report that Liz has made an almost full recovery, but the arm is still a bit tender.

We wanted to make this "Special Issue," well, special! I believe we have accomplished that goal with the features and columns contained herein. We are kicking off with a real treat; a design/construction feature about Frank McMillan's Caudron 9. Frank's fantastic Caudron series of models evolved from his very successful Magna series. There were many variations in the Caudron series and Frank tried a number of different wing designs and even different airplane sizes in a well-thought-out progression to find the ultimate model to fit his personal competition needs. In this feature Frank shares his insights and sound logic on not only the quest for the perfect Stunt model, but also many trimming details and construction details that can be adapted to any stunt model. This is a worthy read.

Another real treat is the how-to on producing molded wing tips by John Callentine. John is a fine woodworker by trade and his talents have translated fully to working with balsa. His VSC Concours-winning Travel Air biplane is simply a work of art, as is his classic Caprice. While at VSC last year I was blown away by the molded wing tip that John dropped in my hand. It was light and perfectly shaped and even had the leadout guide built in! I asked John if he would consider writing a how-to on making tips using his process and he responded with a step-by-step pictorial that is one of the very best articles of its type that I've ever seen. This is solid information fellow Pampians …

Also featured in this issue is segment number 3 in the Stiletto Chronicles. This installment of Les McDonald's amazing journey with the Stiletto focuses on his first World Championships appearance. I won't keep you in suspense: he won! Most of you knew that already … The story behind the win, however, makes for great reading and should serve as inspiration—and as a lesson—for us all. The amazing amount of sacrifice that is required to achieve such a lofty goal can be overwhelming and even a bit destructive at times. Les bares his soul in this one and shows us the need for balance in such a quest. Truly this saga is a tell-all about the life of a top competitor.

David Fitzgerald and Brett Buck have teamed up to produce a very logical and useful article on how to set up a tuned pipe for CL Stunt use. It answers many of the most-often-asked questions about tuned-pipe setups and offers very specific details of installations for several of the most popular engines. These two have done their homework!

The regular columnists and District Directors have also labored to produce "something special" for this issue and I encourage you to read all the District Director columns. You will find very interesting and useful information in many of them.

The only problem I had this time was finding enough room to run the many great articles that I have received. I want to thank everyone who has contributed. It is certainly making my and Liz's job easier. Please, keep those articles coming! I still need a lot of feature material for the coming year's issues of *Stunt News*. It is our hope, and plan, to print many more construction articles for which plans can be ordered through PAMPA Products.

While on that subject, I'd like to thank Bob Kruger for the fantastic job he is doing in providing CAD plans for the construction articles we have on file. Bob also did the CAD work on this month's construction feature, the Caudron 9.

Bob is one of the truly unsung heroes of PAMPA. He really doesn't like the spotlight, but in this case, I'm turning it on him anyway. The work he does on the PAMPA Web site, getting *Stunt News* formatted and ready for downloading from the Web site and the interfacing with our printer to get the files there in an accurate and timely manner is just amazing. We could not operate without him. Thanks a million Bob!

Paul Wynn?

Sure. He's a member of the famous Wynn family. You know, Ed, Keenan, and Paul. Sounds like a vaudeville act … Our apologies go out to Wynn Paul for reversing his name repeatedly in the last issue. Our proofreading needs to improve …

Mystery flier

Matt Colan was the first to guess that the November/December Mystery Flier was Dennis Adamisin! Gee Denny, were you really ever that young and handsome? Matt's prize for guessing right? A two-day extension on his next "Next Generation" column deadline! Enjoy, Matt!

Last thoughts

Liz, Bob Kruger and I just want to one more time thank everyone who has been so supportive of our efforts to get *Stunt News* back on schedule. We appreciate your willingness to jump in and help rather than sit back and snipe.

We are now going to make an effort to improve *Stunt News* in every way; Accuracy, punctuality, pertinence, information delivery, and just plain reading enjoyment. The future is bright indeed for CL Stunt and now we enter into a new decade. The first 10 years of this century were pretty good for our sport, and the next 10 should be even better.

Enjoy the "Special Issue." SN

—Bob Hunt

In 1958 ...

- *The word Aerospace was coined, from the words Aircraft (aero) and Spacecraft (space), taking into consideration that the Earth's atmosphere and outerspace is to be one, or a single realm.*
- *Hall of Fame baseball player Roy Campanella was involved in an automobile accident that ended his career and left him paralyzed.*
- *14-year-old Bobby Fischer wins the United States Chess Championship.*
- *Ruth Carol Taylor was the first African American woman hired as a flight attendant. Hired by Mohawk Airlines, her career lasted only six months, due to another discriminatory barrier—the airline's ban on married flight attendants.* **[How far we've come!]**
- *The U.S. Army inducted Elvis Presley, transforming The King Of Rock & Roll into U.S. private #53310761.*
- *Castro's revolutionary army began its attacks on Havana.*
- *Cheryl Crane, daughter of actress Lana Turner, fatally stabbed her mother's gangster lover Johnny Stompanato (the stabbing was eventually ruled as self-defense).*
- *The bodies of unidentified soldiers killed in action during World War II and the Korean War were buried at the Tomb of the Unknowns in Arlington National Cemetery.*
- *President Dwight D. Eisenhower signed the Alaska Statehood Act into United States law.*
- *The U.S. Congress formally created the National Aeronautics and Space Administration (NASA).*
- *Pioneer 1, the second and most successful of the 3 project Able space probes, became the first spacecraft launched by the newly formed NASA.*
- *President Dwight D. Eisenhower of the USA signed the Federal Aviation Act of 1958, transferring all authority over aviation in the USA to the newly created Federal Aviation Agency (FAA, later renamed Federal Aviation Administration).*
- *Musical legend Michael Jackson was born in Gary, Indiana.*

- *BOAC used the new De Havilland Comet jets, to become the first airline to fly jet passenger services across the Atlantic.*
- *As the year drew to a close, tallies revealed that, for the first time, total passengers carried by air exceeded total passengers carried by sea in transatlantic service.*
- *Nikita Khrushchev became Premier of the Soviet Union.*
- *The right-wing John Birch Society was founded in the USA by Robert Welch, a retired candy manufacturer.*
- *The Bossa nova was born in Rio de Janeiro, with Joao Gilberto's recording of "Chega de Saudade."*
- *Operation Argus: The United States began nuclear tests over the South Atlantic.*
- *Nikita Khrushchev ordered Western allies to evacuate West Berlin within 6 months but backed down in the face of the allies' unity.*

In the "What has really changed?" category:

- *In Lebanon, 5,000 United States Marines landed in the capital Beirut in order to protect the pro-Western government there.*
- *Iraqi Revolution: The Iraqi monarchy was overthrown by Arab nationalists, King Faisal II was murdered and Abdul Karim Qassim assumeed power.*
- *British paratroopers arrived in Jordan; King Hussein asked for help against pressure from Iraq.*

And this young man was on his way to enjoying a lifelong hobby in aeromodeling. Send your guesses to Bob Hunt.

Starting Points

I am looking for four magazines that carried my articles on:

- The Olympic - *American Modeler Annua*l 1963
- The Sting Ray - *American Modeler* 19??
- The Rayette - *Flying Models* 19??
- The Atlanta "60" RC review article in the 1980s

I have had three sets of these four magazines and I have loaned them out over the years and have never had them returned to me. I would like to have a set to keep for my own library so anyone being able to identify one or more of these copies, I would appreciate your mailing them to me at:

RC Gialdini
10525. W. Vienna Ave.
Wauwatosa WI 53222

Let's face it folks, they're out of date as far as current information is concerned—in fact, they are downright ancient as far as Control Line building and flying is concerned. Your assistance would really be appreciated.

I hope to finally be in condition to be able to attend next year's (2010) VSC provided the medical profession approves my traveling and walking which could be the "kicker."

Warmest regards too all and have a Happy Holiday.

Sincerely, Bob Gialdini

Deadlines

Ad and Editorial copy

Issue	Deadline
March/April 2010	January 20, 2010
May/June 2010	March 20, 2010
July/Aug 2010	May 20, 2010
Sept/Oct 2010	July 20, 2010
Nov/Dec 2010	September 20, 2010

Postmaster: Send address changes to: Dave Gardner, 15107 SE 145 Pl., Renton, WA 98059-7308

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Fame and fortune awaits!

Okay, I lied about the fortune. And, well, I guess I lied about the fame as well … But, your editor's never-ending gratitude is something I can promise (the "never-ending" part might be a stretch…) to those of you who can be moved to write something for the pages of *Stunt News.*

Many have already responded and the result is what I feel are a bunch of good, informative articles that we've run, are running in this issue, and will run in the next issue or two. The problem is finding enough "stuff" to keep this roll going throughout the year.

What specifically are we looking for? Well, the hardest articles to find are informative "How-To" pieces. John Callentine has set the bar pretty high for these with his outstanding piece on "Making Molded Wing Tips," which appears elsewhere in this issue. Don't feel intimidated; any information that you might want to pass along concerning how you do a particular modeling chore that might be different than the next guy or gal is welcome.

We are also looking for construction features. Again, the one in this issue about Frank McMillan's Super Caudron is exemplary, so don't think that you have to write a million words or supply us with a model that has a pedigree a mile long. We are looking for stunt model construction articles of all types; full-bodied, profile, sport or competition. If in doubt about your subject, please give me a call!

Also needed are articles on building, finishing, flying, competing, judging and just about anything else that relates to CL Stunt.

We are also looking for a number of new columnists. If you would be interested in writing a column for Stunt News, again, give me a shout.

—Bob Hunt.

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by Frank McMillan

Super Caudron

The story of the Super Caudron series began with more success than I thought I would ever achieve. Much to my surprise, I made the "Top Five" at the 1987 Nationals in Lincoln, Nebraska, thanks to some luck and really strong winds. The design I flew was the "Magna," a cosmetic redesign of Lou Dudka's Matrix. As was the norm of the time, I used the legendary ST .60, and it was modified/tuned by my friend John Hill. This was also the time before the revolutionary carbon props, and I had "a prop" that really worked.

But as happens so many times, luck has a way of turning and reality has a way of setting in. In the following years, the weaknesses of my design and power package began to manifest themselves. The Magna had a very efficient high-aspect-ratio wing that turned well, but, with time, showed that it did not hold minute trim changes, and changing conditions affected its consistency. Compounding this was the power package, which also reacted to changes in the air density. The problem was too much acceleration in certain parts of the pattern. I must point out here that these characteristics were subtle and I still

Here is the ultimate Super Caudron—so far! With Number 9 in the series, Frank feels he's found his preferred aerobatic competition machine.

believed that I had a competitive plane.

Based on my waning success, I reasoned that I needed a new look, principally because the Magna did not appear to "sell." As I researched through possible ideas from the full-scale arena, I came across a series of Pre WWII French Lightweight Fighters manufactured by the Caudron Aircraft Company. Many of you have built and flown perhaps the most famous Stunter of all time, George Aldrich's Nobler. But, did you know that the side profile of the Nobler was based on the Caudron C-460 that flew in and won

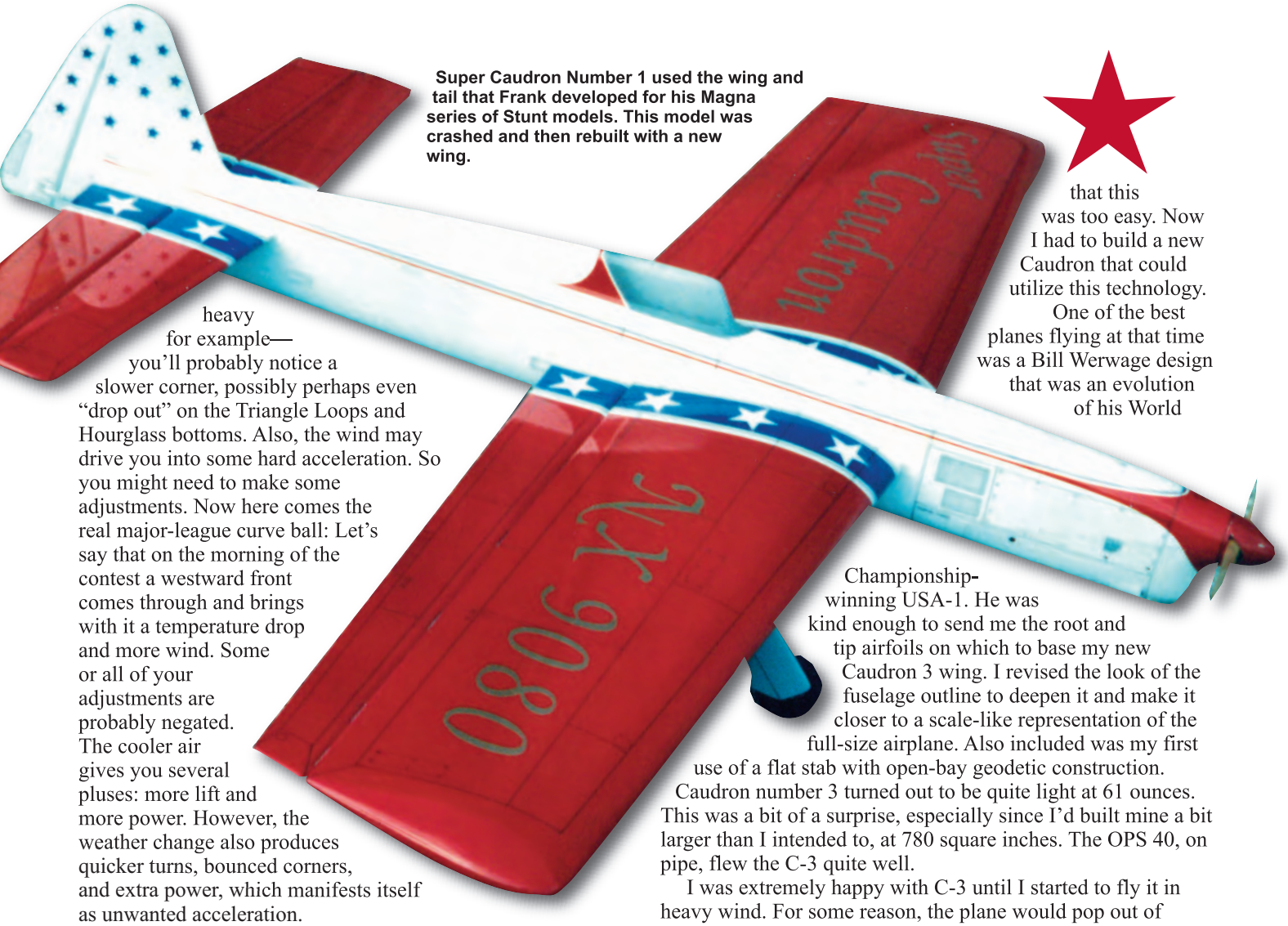
Here are just a few of the models that are still ready to go in Frank's stable. His development of the Super Caudron series has yielded a model that suits his style. They are truly beautiful airplanes!

the 1936 Thompson Trophy Race? I considered the C-460 for a more scale-like appearance, but decided to try a different look. As it turned out, I found several other Caudron aircraft that were similar to the C-460, but different enough to claim some originality.

Al Rabe showed me the design approach he uses to develop semi-scale Stunt models when we were working on my earlier Martin Baker MB5. I made a transparency of the full-size aircraft and projected it against a skeletal drawing of the moments I wanted to use. By adjusting the size of the projected image, you'd be surprised how quickly you can develop a scale-like profile. There is one trick to this process, however; it is unlikely that the entire profile image will adjust over the proposed moments, in one piece. You have to take major portions such as the nose, middle, and rear as separate parts and fit them to your moments. After a trial fit, the various sections are connected and the contours smoothed. It doesn't take too long to arrive at a recognizable profile. This is not an exacting procedure, but does produce pleasing results.

After much drawing, and producing several candidates, the final selection was a combination of several Caudron fighters—C-720 through C-760. I was excited by the look. The first two Caudrons were based on the same flying surfaces and moments as the Magna, and like the Magna I powered them with the venerable ST .60. The first and second Caudrons were reasonably good-flying planes. At 710 square inches of wing area and weight in the low 60-ounce range, they had good cornering performance. As I gained experience with the first two Caudrons, I was able to trim them for even better performance. However, as my experience with them in varying locations and conditions broadened, I began to realize that the entire package reacted to weather and condition changes more than I first realized or wanted.

This would be a good point to quantify these changes, particularly since there are many subtle variables involved. The best example, that many have experienced, is the scenario where you fly at your home field—usually at the same time each day—and perform great practice patterns; you've got it nailed! Then you go to a contest hundreds of miles from your home. You practice in the evening before the contest and it's warmer than you normally experience at home, plus there's your friend "Mariah" (the wind). Of course, you expect *some* change, but if the plane has some issues—like being a bit



Super Caudron Number 1 used the wing and tail that Frank developed for his Magna series of Stunt models. This model was crashed and then rebuilt with a new wing.

heavy for example— you'll probably notice a slower corner, possibly perhaps even "drop out" on the Triangle Loops and Hourglass bottoms. Also, the wind may drive you into some hard acceleration. So you might need to make some adjustments. Now here comes the real major-league curve ball: Let's say that on the morning of the contest a westward front comes through and brings with it a temperature drop and more wind. Some or all of your adjustments are probably negated. The cooler air gives you several pluses: more lift and more power. However, the weather change also produces quicker turns, bounced corners, and extra power, which manifests itself as unwanted acceleration.

What really drove home the point that I needed to make a radical change was the Westover Nats in 1990. I was flying the ST .60-powered Caudron I and performing reasonably well in the qualifying rounds. Top 20 day dawned warm with virtually no drift. The package—including the pilot—just didn't handle the situation very well. As I watched the fliers who were using the, then-new, tuned-pipe setups, I noticed that their planes seemed to all work well. They had the power reserves to punch through the dead air reliably.

In the finals there was exactly the weather change I used in my above example; the temperature had dropped into the 60s and a there was a wind approaching 20 MPH. Once again, the piped setups of Paul Walker and Bob Hunt performed flawlessly. I was super impressed. At this point I should tell you that I *had* tried tuned-pipe setups already, without much success. I vowed to go home and develop a working piped system for myself.

What followed all through the remainder of that summer was a mess of frustrations. I'd modified my "Top-Five" ST .60 ship (Magna) to accept an OPS .40 with pipe. For two months I tried to make it work out on a 100-foot runway in the Texas Summer. All I got was a hard, muffled two-cycle run. This was not what I wanted or expected. Towards the end of that summer, I was visiting the Dallas flying site and was still seeking the so-called "miracle" that the pipe systems were touted to be. Bob Gieseke was there. After he saw what was happening, he told me to push in the pipe. All I can say is that what followed seemed like a "miracle." I had "seen the light." My first thought on first feeling the boost from the pipe was that this was too easy. Now I had to build a new Caudron that could utilize this technology.

One of the best planes flying at that time was a Bill Werwage design that was an evolution of his World Championship-winning USA-1. He was kind enough to send me the root and tip airfoils on which to base my new Caudron 3 wing. I revised the look of the fuselage outline to deepen it and make it closer to a scale-like representation of the full-size airplane. Also included was my first use of a flat stab with open-bay geodetic construction.

Caudron number 3 turned out to be quite light at 61 ounces. This was a bit of a surprise, especially since I'd built mine a bit larger than I intended to, at 780 square inches. The OPS 40, on pipe, flew the C-3 quite well.

I was extremely happy with C-3 until I started to fly it in heavy wind. For some reason, the plane would pop out of certain maneuvers, like the Vertical Figure Eight and the Four Leaf Clover. It took me some time to come up with a cause and a solution. As with any problem, good observation is the key to finding the solution. I found that once I determined where the problem occurred, it was repeatable; this meant it was correctable.

Looking over what could cause a violent shift in the flight path under heavy wind load pointed to something flexing, loading and unloading. By a process of elimination, I determined that the open-bay stab was the culprit. I reasoned that under high stress with the elevator deflected, the stab would twist. When the elevator returned through neutral, the stab would snap back causing a violent reaction. So the stab had to be stiffened. But the question was, "how?" There were several options; replace the stab (an extreme, time consuming approach), wire bracing, or sheeting the stab on the plane. The latter is how I addressed the problem. I stripped the covering from the stab only, sanded the structure, sheeted it with $^{1}/_{16}$-inch quarter grain balsa and grafted it in at the fuselage root. I then refinished the stab as before.

The first flight after this modification proved beyond a doubt that the fix worked extremely well. The model was now very linear in all maneuvers, with no tendency to explode out of the Vertical Eight or Clover, even in very heavy air. This situation convinced me that I was going to use a sheeted built-up stab from then on. C-3 proved to be a good model, eventually placing 8th and 11th at subsequent Nats.

As I've mentioned C-3 was a large model and, in retrospect, too large for even a powerful-piped 40. Remember, in the early

90s, we thought the piped 40 had enormous power. So I thought it would be better served with a mid-sized 650-square-inch model. Also, at this time, I was just looking for a good-flying plane. The idea of finding a design combination that suited my flying style, reflexes, power, etc., had not formed in my mind yet. A good analogy to this is food; I knew I'd get around to food somehow. When you don't have much food, the basics come into play. You need enough to survive. When circumstances improve, the quantity and variety of what you have to consume allows you to be more discerning. It's the same with models; you start to appreciate certain changes and are able to evaluate what you have much more accurately.

At this point in the Caudron series, I'd flown two Matrix-based, high-aspect-ratio, 700-square-inch Caudrons and a larger, lower-aspect-ratio, 780-square-inch Werwage-winged C-3. They all flew well, but the power matches proved to be a little critical in how they reacted to changing conditions. I wanted to go in the direction of higher power. The wonderful PA engines were becoming available and they offered the power I was looking for. Now it was on to the smaller 650-square-inch ship.

Super Caudron Number 2 again used the Magna series' wing and tail set. This model was originally built to accept an ST .60, but was later retrofitted with an OPS .40 and a tuned pipe.

Caudron-4 turned out to be one of those planes I just liked! The adjustments preserved and enhanced the Caudron "look" and the size was just right for the new PA .51. This was one of the first models I built using Bob Hunt's Lost-Foam Wing Building System. The actual wing design was the same as Bob Hunt's Saturn, which was a proven wing of the size I wanted to use. I found out from Bob later that the airfoils for that wing were actually designed by Bill Werwage and had also been used by Mike Dietrich on his Cobra 7 design. The C-4 had the new style tail surfaces (formed sheeted geodetic stab). This was also the first Caudron that incorporated molded balsa top and bottom sections, plus a custom canopy molded by Dave Midgely. This one flew well enough to miss making the top five by a just a third of a point.

In retrospect, perhaps I should have pursued the C-4 configuration further, but I watched Bill Werwage's Geo-XL carefully at the 1996 Nats and liked the consistent speed it displayed throughout the pattern in changing conditions. This might just be the "carrot" I was chasing. Also, The PA .61 became available to drive the larger 730-square-inch size wing.

The Geo-XL wing is a high-drag wing. This is one of the reasons I've come to regard this as my favorite configuration. The wing works the motor hard, which facilitates setting the motor characteristics over a broader range. A comment here on airfoils: All the airfoils on the Caudron series models are similar with a maximum thickness of $2^1/_8$ inches, and the shapes of all the leading edges are virtually identical. This actually surprised me when I compared them and found that there was a clear lineage starting at the Hunt Genesis and evolving through the Dudka Matrix and beyond. The other unexpected characteristic of the thinner family of airfoils (relative to

First of the series to be specifically designed to accept an OPS .40 and a tuned pipe, Super Caudron Number 3 utilized Bill Werwage's USA-1 airfoils, which were fairly thin.

Another view of Super Caudron Number 3 reveals a very long-span stabilizer/elevator assembly and lots of rudder "overhang." Frank says it was a "really good plane!"

the Walker, Fancher, Greenaway thicker, blunter sections) is that they don't tend to accelerate in the wind.

Caudrons C-5, C-6, and subsequently C-9 were all based on the proven Geo-XL wing. The tail moment was increased slightly and the stab/elevator area was increased to 27%. The "groove" experienced with these improvements was measurably improved, as was expected with the increased tail volume coefficient. The turn was sharper, but the interesting change was that the sharp turns could be stopped more positively. Collectively, these were the most successful Caudrons of the series, competitively placing in the Top Five at the Nats regularly and winning many local contests.

Not content with success, I looked for the next improvement to the line. Bill Werwage had just produced his stunning P-47, and I was interested in using that wing design. His planes always looked like they turned so clean and smooth; especially in the wind. After drawing up the C-7 version using that wing design, I thought for sure that this was the "one." Don't we always think that the latest is the best? This brought me back to a higher-aspect-ratio wing. The stabilizer/elevator combination was increased in aspect ratio to match the wing look.

My initial impression was more than favorable; the narrower wing chord led to a more compact side profile. C-7 seemed like it fit the circle better, as compared to the larger C-5 and C-6 versions. It was easier to fly smaller, more compact maneuvers. The clean, high-aspect-ratio wing really penetrated well. Overall, I had some initial success, both locally and at the national level, so much so that I built another one, the C-8, within six months. At the time, I thought this was the future.

As I gained more experience with these versions, I began to notice that, although I was getting some excellent flights, I was also making a lot of adjustments. When the wind came up, I found it necessary to change the C/G, the prop, add more restriction on the motor, and reduce the nitro content of the fuel. I gathered a lot of data, but I didn't get it right every time. For high-level competition, this just wasn't looking good enough. Now I had to figure out what the problem was; me or something else. Something wasn't right, at least for my program. Whatever I was looking for, this setup didn't fit my style of flying. I went back and re-evaluated every airplane that I had flown and had success with over the years. I reasoned that although the P-47 wing worked for others, it just didn't work for me.

My conclusion was that there was a factor I hadn't considered which may be a bit controversial. Most fliers have several models that they consider their best. But why do they consider these particular examples their best? My thought is that those models were simply good examples for whatever reason; better alignment, weight, etc. I found that the low-aspect-ratio Caudrons (C-5, C-6, C-9) were the fit that was most comfortable for me in all conditions. Looking back on my performance, this was the configuration that I seemed able to fly better. Good airplanes fly well, obviously, but my suggestion—to conclude this journey through my last twenty years—is this: Try several of the successful designs, Impact, SV series, etc. just to see if there is one that gives you a feeling of belonging. When you find the one that fits best, just duplicate it and start practicing!

A total departure from the rest of the series of larger Super Caudrons, Number 4 was designed around Bob Hunt's 660-square-inch Saturn wing. This one was powered by a PA .51 fitted with a carbon tuned pipe.

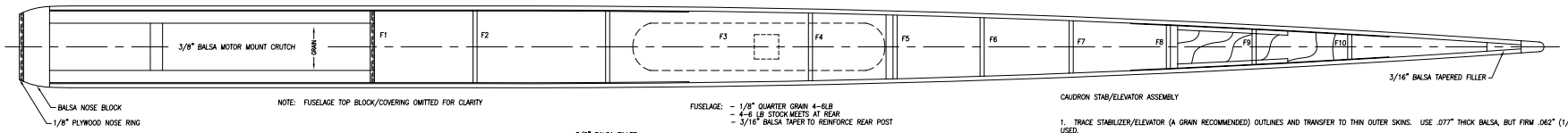
Frank's friend, Keith Trostle checks the paint lines on Number 5 for bumps. He didn't find any as all of the Super Caudrons sport, well, super finishes. This was the first of the Super Caudrons to feature a Geo-XL wing.

General thoughts and observations

From the first cut on the first part, there is no "good enough" in a model that you want to be the best. I won't try to quantify a tolerance for parts because everything is additive. Paul Walker once wrote that he thought $^{1}/_{64}$ inch was a goal to shoot for when aligning a model as a not-to-exceed tolerance. I know that he has a master alignment fixture in which he assembles his Impact models. Al Rabe has evolved an integrated assembly procedure that utilizes the tried and true "tube" wing fixture, "pocket" fuselage fixture, and a stab alignment fixture. Of course, my favorite still is Bob Hunt's Lost Foam System for building wings. There are several other fixtures or systems available such as the Tom Morris's "Lincoln Log" method and Byron Barker's tube wing fixtures and fuselage fixtures. The bottom line is to find a "system" that you can become comfortable with and use it religiously.

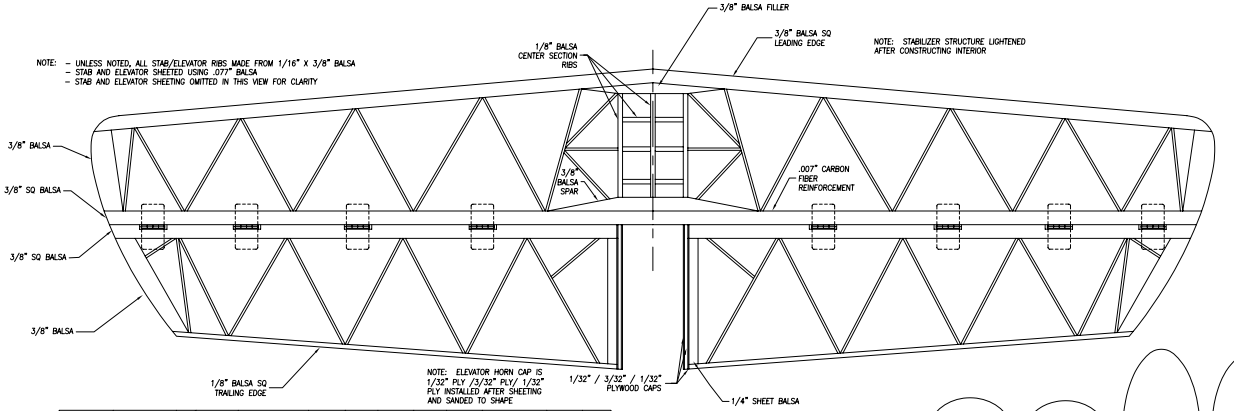
Continuing with the "good enough" thought, I know I don't build perfect parts every time. There have been numerous occasions when I used the best wood I ever had, built a stab or flap the best I could, and the result was still a warped part. I wasted time and wood, but considering the ultimate goal, it was best to discard a sub-par part and do it again. These occurrences have to be used as a learning situation. Analyze the part and ask yourself, "What caused the part to be unacceptable?" Was it procedure, design, or perhaps wood selection?

Super Caudron Number 6 flew originally with a PA .61, then with a PA .65 and then the cowl was modified to accept the mighty PA .75. Longer landing gear were also added to provide ground clearance for the larger-diameter prop.



NOTE: FUSELAGE TOP BLOCK/COVERING OMITTED FOR CLARITY

FUSELAGE: – 1/8" QUARTER GRAIN 4-6LB
– 4-6 LB STOCK MEETS AT REAR
– 3/16" BALSA TAPER TO REINFORCE REAR POST



NOTE: – UNLESS NOTED, ALL STAB/ELEVATOR RIBS MADE FROM 1/16" X 3/8" BALSA
– STAB AND ELEVATOR SHEETED USING .077" BALSA
– STAB AND ELEVATOR SHEETING OMITTED IN THIS VIEW FOR CLARITY

NOTE: STABILIZER STRUCTURE LIGHTENED AFTER CONSTRUCTING INTERIOR

NOTE: ELEVATOR HORN CAP IS 1/32" PLY /3/32" PLY/ 1/32" PLY INSTALLED AFTER SHEETING AND SANDED TO SHAPE

CAUDRON STAB/ELEVATOR ASSEMBLY

1. TRACE STABILIZER/ELEVATOR (A GRAIN RECOMMENDED) OUTLINES AND TRANSFER TO THIN OUTER SKINS. USE .077" THICK BALSA, BUT FIRM .062" (1/16") CAN BE USED.

2. THE INTERIOR STABILIZER/ELEVATOR CONSTRUCTION IS 3/8" THICK. STRIP SUFFICIENT 3/8" X 1/16" FOR MAIN RIB STRUCTURE. LEADING AND HINGE LINE STRIPS ARE CUT FROM 3/8" SHEET (FIRM). THE MAIN STAB TRAILING EDGE IS 3/8" SHEET WITH A SUB-SPAR REINFORCEMENT OF .007" CARBON ACROSS THE FULL SPAN.

3. PIN THE STAB BOTTOM TO THE PLANS AND BEGIN ASSEMBLY OF THE INTERIOR STRUCTURE WITH THE MAIN SPAR AND OUTLINE OF 3/8" BALSA. NEXT START THE RIB FILL IN WITH 3/8" X 1/8" BALSA FOR THE CENTER SECTION. CONTINUE WITH 1/16" X 3/8" BALSA FOR THE REMAINING RIBS USING THE PLAN EXTENSION MARKS FOR POSITIONING. NOTE: SINCE THE STAB IS A FLAT STRUCTURE IT IS ESSENTIAL THAT THE BUILDING STRUCTURE BE ABSOLUTELY FLAT.

4. WITH A LONG SANDING BLOCK CAREFULLY LEVEL THE FINISHED STRUCTURE. MEASURE THE DEPTH OF THE STRUCTURE USING DIAL CALIPERS AND ADJUST SO THAT IT IS EQUAL ACROSS THE ENTIRE SURFACE. THE REASON IS THAT IT IS VERY EASY TO GET AN UNEVEN SURFACE WHILE DOING THE SANDING.

5. LIGHTEN THE INTERIOR STRUCTURE USING A DREMEL TOOL WITH THE EXCEPTION OF THE CARBON REINFORCED MAIN SPAR. ALL OTHER PARTS ARE "SWISS CHEESED".

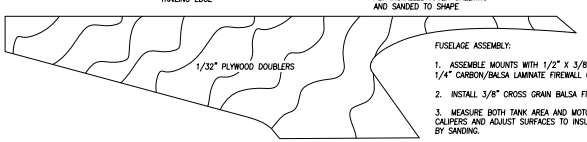
6. IT'S TIME TO FIT THE TOP SURFACE. FROM EXPERIENCE, I'VE FOUND YOU SHOULD USE A SLOW SET ADHESIVE. THIS GIVES TIME TO PLACE THE TOP CORRECTLY AND GET IT WEIGHED DOWN BEFORE THE ADHESIVE SETS. REMEMBER YOU'VE GOT TO GET ALL THE MATING SURFACES COATED WITH ADHESIVE. ALTHOUGH IT MAY SEEM THE HEAVIEST CHOICE, I USE EPOXY GLUE SPREAD OUT WITH A "Q-TIP" DON'T GET IN A HURRY AT THIS POINT, BECAUSE IF THE GLUE YOU USE SETS TOO QUICKLY, IT WON'T MATTER IF YOU WEIGHT IT DOWN; THERE WILL BE A BOW BUILT IN.

7. THE ELEVATORS ARE DONE SOMEWHAT DIFFERENTLY. THE FRAMEWORK IS CONSTRUCTED WITH 3/8" THICK WOOD THEN SHAPED TO A TRIANGULAR SECTION. THE SHEETING IS THEN APPLIED.

8. NOTE THAT THE TRAILING EDGE OF THE ELEVATORS IS 1/8" BALSA SQUARE. THIS MUST BE ALIGNED TO THE CENTER OF THE RIBS BY SUPPORTING WITH PIECE OF 1/8" BALSA SQUARE SHIMS. THE INSIDE EDGE IS 1/4" SHORT OF THE DRAWING DIMENSION. THIS IS DUE TO THE ELEVATOR HORN CAP CONSISTING OF PLYWOOD LAMINATIONS. THIS CAP IS FABRICATED AND APPLIED AFTER THE ELEVATORS ARE SHEETED AND ROUGHLY SHAPED.

9. WHEN THE BARE FRAMEWORK IS COMPLETED, BEFORE YOU REMOVE IT FROM THE BUILDING BOARD YOU MAKE THE FIRST SANDING OF ONE SIDE OF THE TRIANGLE RIB SHAPE. IT'S EASIER NOW WITH THE FRAMEWORK ATTACHED TO THE BUILDING BOARD. THE SECOND SANDING IS A LITTLE MORE DIFFICULT, BUT WITH CARE CAN BE ACCOMPLISHED ACCURATELY. REFERENCE LINES ON THE LEADING EDGE OF THE ELEVATOR SHOULD BE DRAWN APPROXIMATELY 3/16"BACK FROM THE HINGE LINE. THE ELEVATORS CAN BE SHEETED WITH THE SLOWED CA ONE SIDE AT A TIME. PLACE THE SHEETING ON THE BUILDING BOARD AND APPLY THE ELEVATOR FRAMEWORK CAREFULLY. USE THE SAME TECHNIQUE FOR THE OPPOSITE SIDE. I HAVEN'T MENTIONED LIGHTENING THE STRUCTURE OF THE ELEVATORS, BECAUSE AFTER SOME SANDING THERE JUST ISN'T MUCH LEFT THAT YOU CAN SAFELY REMOVE.

10. A WORD OF CAUTION AT THIS POINT. IT IS PRUDENT TO CHECK THE SHAPE OF THE STABILIZER/ELEVATOR NOW. WHEN SANDING IT IS EASY TO SAND ONE SIDE A LITTLE MORE THAN THE OTHER. MAKE IT A PRACTICE TO CONTINUALLY CHECK THAT THE SURFACES ARE EQUAL THICKNESS AND EXACT PLAN FORM SHAPE.



FUSELAGE ASSEMBLY:

1. ASSEMBLE MOUNTS WITH 1/2" X 3/8" MAPLE CROSS PIECE AND 1/4" CARBON/BALSA LAMINATE FIREWALL ON FLAT SURFACE

2. INSTALL 3/8" CROSS GRAIN BALSA FILLER BETWEEN MOTOR MOUNTS

3. MEASURE BOTH TANK AREA AND MOTOR MOUNT AREA WITH DIAL CALIPERS AND ADJUST SURFACES TO INSURE EACH IS PERFECTLY LEVEL BY SANDING.

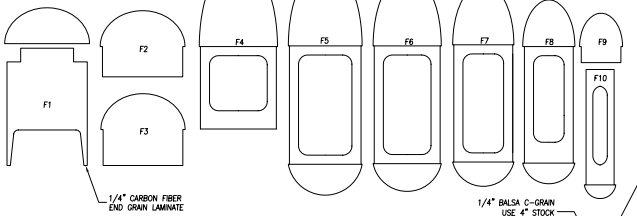
4. DRILL MOTOR MOUNTS AND PHENOLIC CRUSH PLATE.

5. INSTALL CRUSH PLATE WITH SLOW SET EPOXY. MOUNT ENGINE WHEN GLUE IS CURING TO ESTABLISH A PERFECTLY FLAT MOUNTING SURFACE.

6. INSTALL 1/8" PLYWOOD BRIDGING PLATE WITH SLOW SET EPOXY. CLAMP OR WEIGHT ASSEMBLY TO FLAT SURFACE. THIS SURFACE IS NOW THE REFERNCE POINT FOR FURTHER ASSEMBLY.

7. PREPARE FUSELAGE SIDES FOR ASSEMBLY.
– LAMINATE NOSE AND STAB DOUBLERS.
– DEVELOP ACCESS HATCH ASSEMBLY.

8. ASSEMBLE FUSELAGE IN A JIG USING CRUTCH LINE AS PRIMARY REFERENCE.

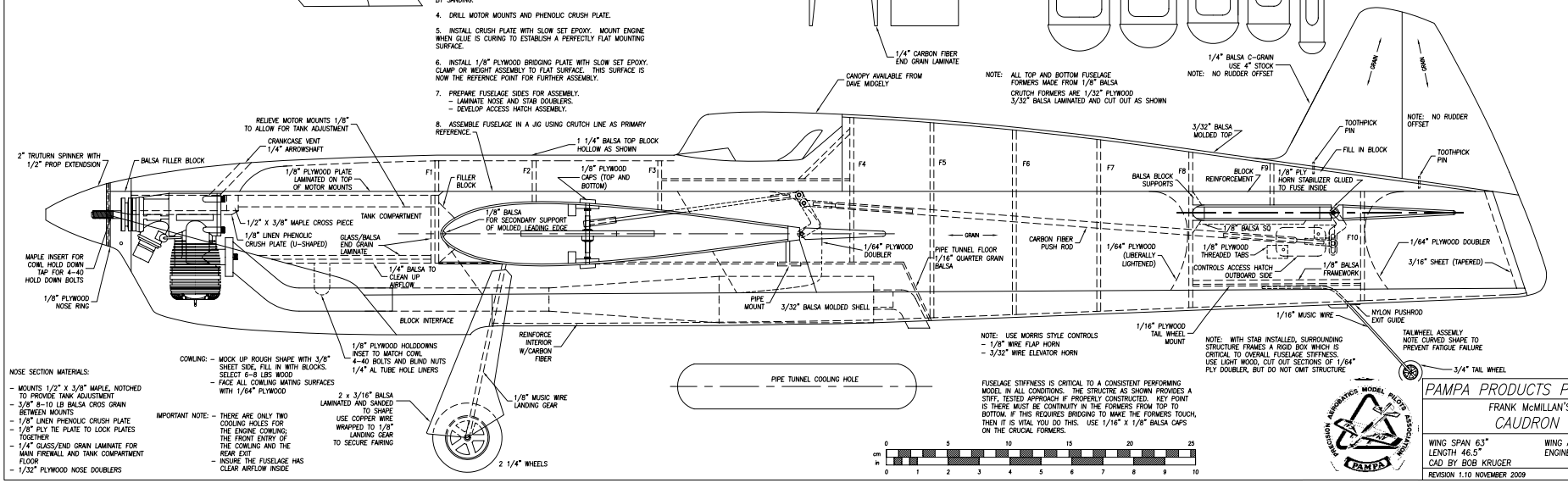


NOTE: ALL TOP AND BOTTOM FUSELAGE FORMERS MADE FROM 1/8" BALSA

CRUTCH FORMERS ARE 1/32" PLYWOOD
3/32" BALSA LAMINATED AND CUT OUT AS SHOWN

1/4" BALSA C-GRAIN USE 4" STOCK

NOTE: NO RUDDER OFFSET



NOTE: USE MORRIS STYLE CONTROLS
– 1/8" WIRE FLAP HORN
– 3/32" WIRE ELEVATOR HORN

NOTE: WITH STAB INSTALLED, SURROUNDING STRUCTURE FRAMES A RIGID BOX WHICH IS CRITICAL TO OVERALL FUSELAGE STIFFNESS. USE LIGHT WOOD, CUT OUT SECTIONS OF 1/64" PLY DOUBLER, BUT DO NOT OMIT STRUCTURE

NOSE SECTION MATERIALS:

– MOUNTS 1/2" X 3/8" MAPLE, NOTCHED TO PROVIDE TANK ADJUSTMENT
– 3/8" 8-10 LB BALSA CROS GRAIN BETWEEN MOUNTS
– 1/8" LINEN PHENOLIC CRUSH PLATE
– 1/8" PLY TIE PLATE TO LOCK PLATES TOGETHER
– 1/4" GLASS/END GRAIN LAMINATE FOR MAIN FIREWALL AND TANK COMPARTMENT FLOOR
– 1/32" PLYWOOD NOSE DOUBLERS

COWLING: – MOCK UP ROUGH SHAPE WITH 3/8" SHEET SIDE, FILL IN WITH BLOCKS. SELECT 6-8 LBS WOOD
– FACE ALL COWLING MATING SURFACES WITH 1/64" PLYWOOD

IMPORTANT NOTE: – THERE ARE ONLY TWO COOLING HOLES FOR THE ENGINE COWLING; THE FRONT ENTRY OF THE COWLING AND THE REAR EXIT
– INSURE THE FUSELAGE HAS CLEAR AIRFLOW INSIDE

2 x 3/16" BALSA LAMINATED AND SANDED TO SHAPE USE COPPER WIRE WRAPPED TO 1/8" LANDING GEAR TO SECURE FAIRING

1/8" MUSIC WIRE LANDING GEAR

2 1/4" WHEELS

PIPE TUNNEL COOLING HOLE

FUSELAGE STIFFNESS IS CRITICAL TO A CONSISTENT PERFORMING MODEL IN ALL CONDITIONS. THE STRUCTRE AS SHOWN PROVIDES A STIFF, TESTED APPROACH IF PROPERLY CONSTRUCTED. KEY POINT IS THERE MUST BE CONTINUITY IN THE FORMERS FROM TOP TO BOTTOM. IF THIS REQUIRES BRIDGING TO MAKE THE FORMERS TOUCH, THEN IT IS VITAL YOU DO THIS. USE 1/16" X 1/8" BALSA CAPS ON THE CRUCIAL FORMERS.

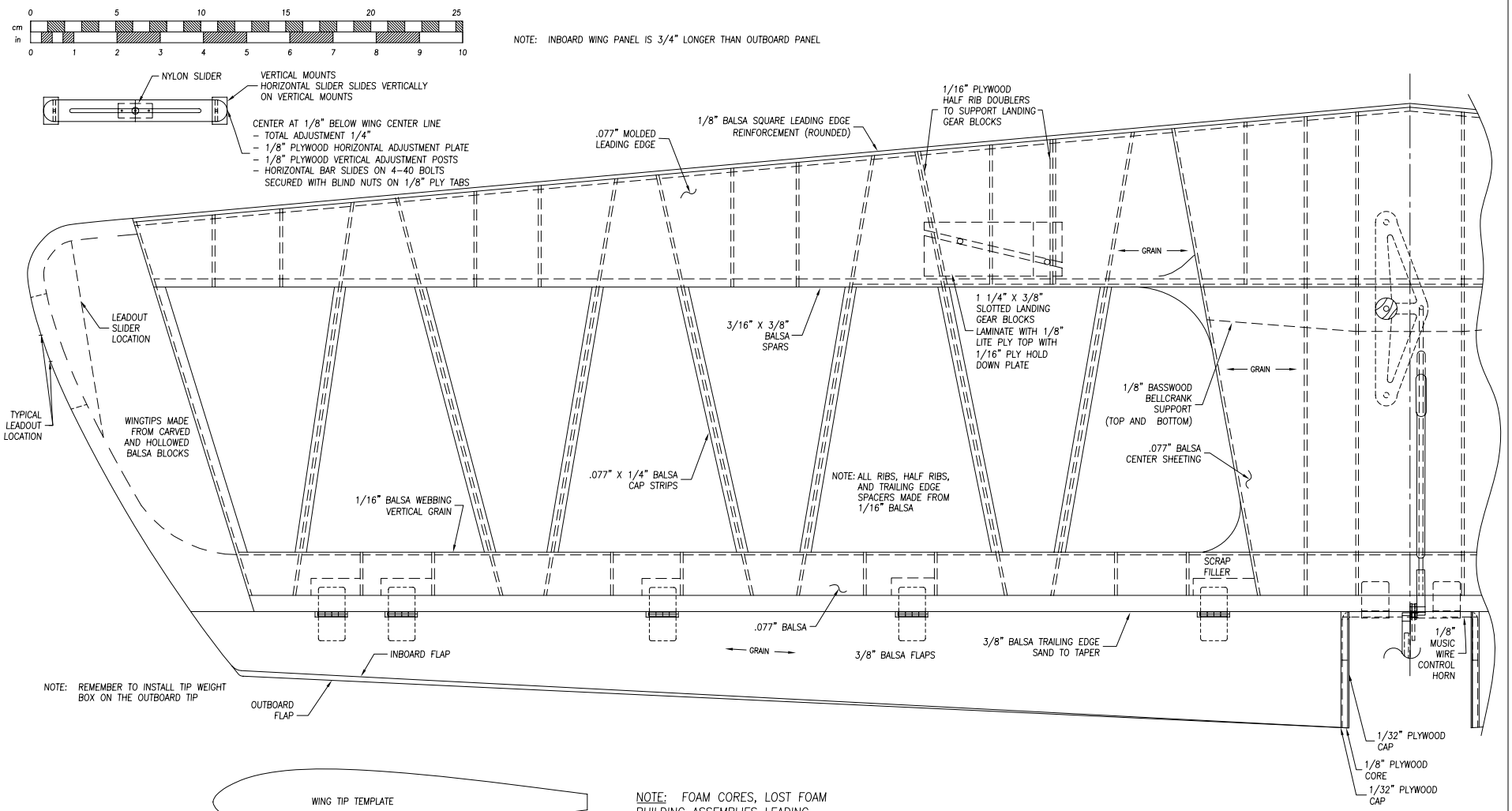
PAMPA PRODUCTS PRESENTS

FRANK McMILLAN'S

CAUDRON

WING SPAN 63" WING AREA 715 SQ. IN.
LENGTH 46.5" ENGINE SIZE PA 61-.75
CAD BY BOB KRUGER

REVISION 1.10 NOVEMBER 2009 SHEET 1 OF 2



NOTE: FOAM CORES, LOST FOAM BUILDING ASSEMBLIES LEADING EDGE BUCKS, AND RIB SETS FOR THE "CAUDRON" ARE AVAILABLE FROM:

ROBIN'S VIEW PRODUCTIONS
STOCKERTOWN, PA 18083
TEL: (610) 746–0106
EMAIL: robinhunt@rcn.com

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PAMPA

PAMPA PRODUCTS PRESENTS

FRANK McMILLAN'S

CAUDRON

WING SPAN 63" | WING AREA 715 SQ. IN.
LENGTH 46.5" | ENGINE SIZE PA 61–.75
CAD BY BOB KRUGER

REVISION 1.10 NOVEMBER 2009 | SHEET 2 OF 2

First of the "Long-Wing" series of Super Caudrons was the elegant Number 7, which sported a version of Bill Werwage's Geo-Bolt wing. This one, according to Frank, is an excellent wind flyer. This model sat on the front row at appearance point judging at the Nats.

Has there been a point in time when you've had a long layoff from flying and then, when you started flying again, found you couldn't put the plane where you wanted to. I find myself having to rethink how to do certain things I thought I was comfortable with. Al Rabe told me recently that he reviewed his own videos as he went through assembling his latest Mustang. (Check out his videos; they contain a wealth of information and techniques.)

Thoughts on construction

There have been many articles on construction and finishing. If you have watched the many available building videos, then you have been exposed to the basics. The bottom line is that all the subjects that relate to completing a competition model resolve to patience and careful work. One interesting point has occurred to me over my almost sixty years of building and flying, and that is that building and flying have a not-so-obvious common point. You get better as a flier by burning fuel. But the same thought applies to building. The more you build the better you get. Let me state that again: *The more you build the better you get*. Think back.

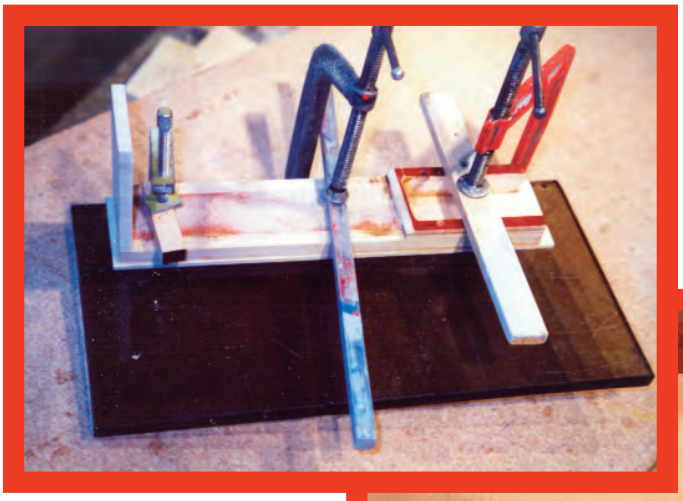
Many of us have a tendency to rest comfortably after completing a good-flying plane; that's only natural. Try to resist that urge, because nothing is certain. Recently, I broke an airplane that had great potential after only nine flights. Start another project as soon as you finish one. Plan and acquire what you need by way of parts and pieces. Try to allocate an hour here and there to develop a part and then bag it. (I love the idea of having a group of bags with parts and pieces. It's like making your own super kit.) All the large projects in the world can be broken down into manageable pieces. The management term would be "chunking." Approaching your next project this way will let you view it as something you can start and make progress on. Looking forward at the huge expenditure of time required to build and finish a Stunt model as a totality is overwhelming. Breaking it down into smaller, more manageable pieces makes it seem much more doable.

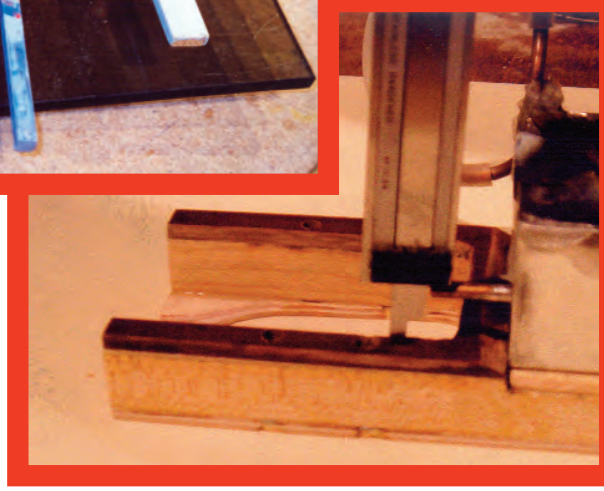
As I hinted, this won't be an article that goes into the details of building. What I'm going to share with you is a collection of observations I came up with while developing the Caudron series designs.

I'll start with some of the construction elements and later cover some flying/trim thoughts.

We stressed accuracy and, as a given, light weight. The next really

The next version in the "Long-Wing" series featured a deepened fuselage and a slightly longer tail moment. Frank flew Number 8 at the hotly contested 2004 Nats, and against international competition, to eighth place.





Here is the engine crutch assembly (above) being glued and clamped. This assembly must be both strong and accurate! Here is how you measure the height of the top of the feed tube from the tank to the bottom surface of the engine mount crutch (right). There is a complete explanation of this in the text.

Here's the engine crutch assembly in the fuselage assembly fixture. Note the use of a 1/8-inch thick linen-based phenolic plate onto which the engine will sit (right).

important area is structure rigidity. Why is this so critical? The answer is consistent, predictable performance in all conditions. Have you ever had a plane that flew well in "light" air and then you just couldn't get it to work in "heavy" air? The plane was flexing! That's a "glittering generality" but the cause could be in the torsion of the fuselage, stabilizer, wing, flaps, or control system. Over the years techniques have evolved that have solved some of these problems. But a bit of repetition won't hurt on some of the more important points.

Throwing more wood/structure at an area to increase its strength or torsional rigidity is not necessarily the right or best solution. Proper wood selection for each piece is, of course, a key element. An example would be the Yatsenko Shark "Kit" that I examined at the Nats. Much of the package employed molded balsa, which was impressive in that quarter grain wood was used for compound curved parts—probably employing a steaming process to make the wood more flexible and formable. But I was also interested in the fuselage former construction. They use multiple pieces of approximately 1/16-inch balsa, laminated to take advantage of the grain direction and the attendant strength that would impart. Very inventive and intelligent! Each lamination layer was composed of quarter grain wood with the predominant grain running in the crush direction. The former was relieved to only about a 1/4-inch wide perimeter, but because of the lamination and grain, retained sufficient strength and stiffness, with very little weight.

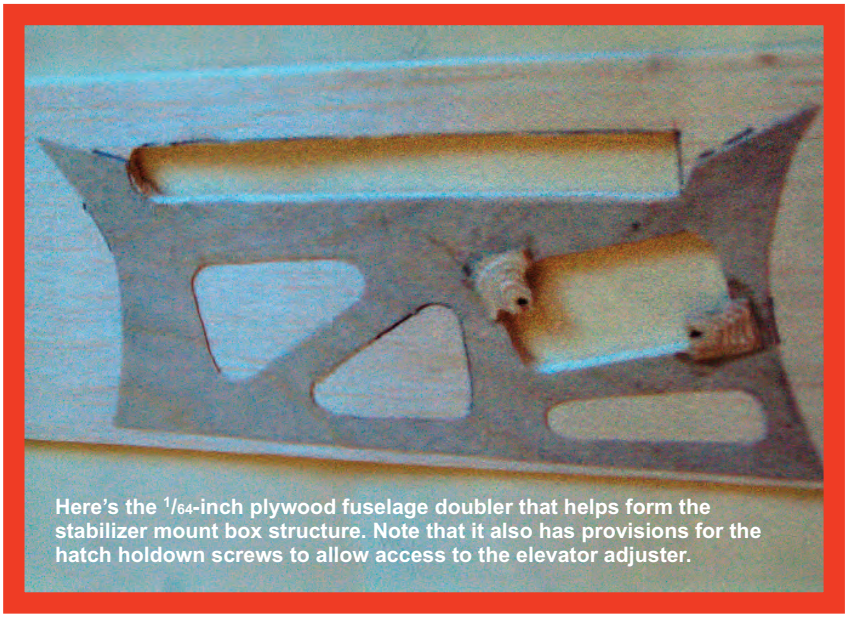
Al Rabe has used a similar approach for many years, laminating 1/32-inch ply and 3/32-inch balsa for the formers in his many semi-scale designs. I've adapted the same approach in all the Caudrons. You'd be surprised how light and stiff these particular formers are.

While we're on the subject of the fuselage, we need to get a key point across. Full-size airplanes employ monocoque structure. The tube-like structure provides exceptional stiffness. However, the structure must be continuous to provide that strength. If you're like me, I look at every plan and every plane as critically as I can to see if there is anything I can glean and apply to my own designs. I'm always looking for some technique that provides the stiffness, which translates into consistent performance.

In the mid-eighties, a geodetic ladder approach was applied to the main fuselage crutch structure. I tried it and used it on several of the Caudron predecessors. It does work, but requires added structure. I kept thinking about the "semi-scales" which have little internal structure, deriving their strength from a true monocoque structure employing molded shells. I was interested in adapting this principal to the more classic Stunt model structure with the basic sides, top, and bottom. So I focused on what tied the monocoque together. The answer was to make each former into essentially one continuous piece from top to bottom at each former station. When I focused on keeping all of the main crutch formers in contact with the formers in the upper and lower shells, I had a structure that would crack before flexing. Having all the formers in contact was critical and, in one case, when I placed the top shell on, I missed contact with one former; the structure was just not rigid at that point. When I put in a contact strip to join the two formers, the desired stiffness immediately returned.

There is another area in the fuselage that I happened on while improving the details of my control access hatch under the stabilizer. I was working hard at making this access feature as light as I possibly could, while achieving good utility. The hatch was simply a balsa plate held in position with two aluminum flat head socket screws. The screws (4-40 only; I tried smaller screws but the plywood into which they were threaded did not hold up) held the hatch in position through two threaded plywood tabs, which were glued to the interior of the fuselage. As I considered how to practically execute this, I realized that the plywood tabs would not hold to the balsa for any length of time. The solution was to install a 1/64-inch plywood doubler to hold the tabs.

At the same time, there was another consideration in the stab area. If you've looked at a lot of designs, you'll note that most have a former placed at the leading edge of the stab. But then there is no structure from that former aft to the tail post.



Here's the 1/64-inch plywood fuselage doubler that helps form the stabilizer mount box structure. Note that it also has provisions for the hatch holdown screws to allow access to the elevator adjuster.

plan for clarity.) Please consider using this approach in some form, it does make a difference!

Oh yes, I did start using molded shells. They are more work to produce initially, but they do save weight. I've included the former patterns on the plan. There are many articles on the molding techniques involved. Bob Hunt and Al Rabe also have excellent videos depicting the whole molding process and Bob Hunt now offers molded balsa shells for any design as a part of his services at Robin's View Productions.

A few words on building light: It's easy to add structure; but much more difficult to take out structure. This is as much a key to making light planes as is using the lightest wood. Minimizing structure is the goal, but knowing how to do it properly is hard to define. Al Rabe used to look at his crashes and analyze all the pieces. If the structure survived in a given area, he would re-design and reduce the structure at that point. A key point to keep in mind is stress management in the area you're re-evaluating. Tie every line of structure to the outer skin of the plane. Right angles develop a stress riser. Fillet areas where necessary and make tight joints to minimize the amount of adhesive.

Even with the stab locked securely in place, this left a long span of torsionally flexible area in an important location.

What evolved was the construction of a "box system" using the aforementioned 1/64-inch plywood doublers with lots of cut outs, from just ahead of the stab former to behind the stab hinge line. This reinforcement added little weight and served as the support for the access panel and the sides of what was to become a very rigid box. A former behind the hinge line and the tail wheel mounting plate completed the box once the stabilizer was glued in place. (See the detail of this area on the

Wood selection is always a prime consideration. Grain type and density in the proper location provides the biggest pay off. One key point I consider important in the wing construction is the selection of proper wood for the spars. This *is not* the place to save weight! I know of two friends who folded wings because the spars they used were too soft. What you're looking for is medium density, straight grain wood with even flex throughout the length of the piece. Some builders like to strip the spars from a single piece to get a good density and grain properties match. When I've done this with medium wood, the strips would warp as the internal stresses were relieved during the stripping process. I prowl the hobby shops searching for pieces of the proper size (3/16 x 3/8). By the way, check out Michael's or Hobby Lobby. They have balsa displays and occasionally you will find a great piece of wood at these stores.

The model that preceded the Super Caudron series in Frank's development program was the Magna. This one was powered by an ST .60 and finished in the top five at the Nats in 1987.

Ever since various forms of carbon graphite have become commonly available, we've tried to integrate them into our structures. I've laminated .007 unidirectional carbon reinforcing strips to the wing spars. However, I don't believe that proved to be worthwhile. I still, however, use a full-length .007 carbon spar doubler in the stabilizer.

I really like carbon/end-grain-balsa laminate (1/4-inch thick) for the main firewall and tank area. As a finishing component, .2 Oz./Sq.

Bill Werwage (left) discusses the attributes of the final Magna series model with Frank. Flying this one Frank finished seventh at the Pasco, Washington, Nats. It was the basis for the first Super Caudron.

Yd. carbon mat has several applications. Used as a substitute for silkspan over all the sheeted areas it has several advantages. It fills the grain quickly and when the dope has dried and hardened over several weeks it provides a hard shell, which only adds to the torsional rigidity of all the surfaces. In the nose area, multiple layers provide an excellent final contouring material. I've found with patience the layers can be shaped easily and provide a durable surface that will not eventually show grain, as will fiberglass glass reinforcement. Note that each succeeding layer of carbon has to be applied with several coats of clear dope for proper adhesion; otherwise the layers will separate during the finishing process.

As the Caudron series evolved over the years, so did the power packages. Starting with the OPS .40, I progressed through Randy Smith's wonderful PA .51, .61, .65 engines and now on to the Merlin .75. The reason I bring this up is not to discuss the merits of the engine and associated pipe systems; they have all been exceptional in respect to power, characteristics, and durability. But, the weight of the power systems in total and in distribution, have changed as the engines and pipes have evolved. You would think that this would not be a problem and that all you would have to do is just add some nose weight or tail weight as required when you change from one system to another and go fly. But this is not necessarily the case. There is another C/G factor to consider, and that is the vertical C/G.

Over the years, I've read about vertical C/G effects and the problems they cause, but had not really experienced an adverse effect that I could attribute to vertical C/G placement. About ten years ago, I had a problem that I thought was pipe related, so I decided to change to another example of the same pipe (but ten grams heavier). The surprise was that the plane flew poorly, with the inboard wing low. So I changed back to the first pipe and the plane was back to normal. I know that this sounds odd, but since then I've had other, similar, experiences. The many classic designs that used the light Fox .35 come to mind. Many of us are now using the modern, much heavier engines in our Classic ships and typically experience trimming difficulties. The weight distribution on these new engines adversely affects the vertical C/G.

In his definitive "Impact" article in *Flying Models*, Paul Walker wrote that the first thing you do in trimming a new plane is level the wings. That's where the problem starts. Let's say the process begins with the outboard wing high (or it could be the opposite). Then you try to correct it, but as you go through adjusting the flaps or tab, and adjusting tip weight, you find out that this simple procedure has become very difficult. Also, the perfect setting doesn't hold when you think you've got it. Often, you'll find you've got more tip weight than would be even close to normal. So, how do we look at this problem?

When I've discussed this vertical C/G problem with other fliers, the response I usually get is to hang the plane by the leadouts. The thought here is that if the model hangs with the wing absolutely in line with the leadouts, then there is no vertical C/G problem. My opinion is that this procedure is only a very coarse indicator and doesn't take into account centrifugal force that is induced in flight. This is a real factor, and it can make the model roll one way or the other in respect to the angle of the lines. This problem can become difficult to correct because there are so many variables; power package weight distribution, location of all the internals, and finally just the individual nature of each of our planes.

The way I attacked the problem (when I realized that there was a vertical C/G problem) was to start with a baseline built in. From conversations with Bill Werwage and Randy Smith, a good starting point for leadout placement is $^1/_8$ inch below the wing centerline at the leadout slider. Unfortunately, due to the factors mentioned previously, this setting is not a guarantee. In the past, I've actually sanded the leadout guide slot and glued in shims to move the slider up or down. Typically, $^1/_{16}$-inch ply shims were a good starting point but as I got real close I've used shims as thin as $^1/_{64}$ inch. When I got it close, then dead on, *every* other trim factor started to work in a *linear* manner.

After experiencing this in too many planes, I finally started installing leadout guides with vertical adjustments. Instead of attaching the horizontal slider mount to the tip, I used two vertical post mounts, front and rear, to allow the horizontal mount to be raised and lowered. About $^1/_4$-inch total adjustment, centered about the nominal $^1/_8$-inch starting point mentioned earlier, will serve virtually any situation. (See the plan for additional clarification on this point.)

One thing I need to mention is that it is really easy to

"Strive for perfection in everything. Take the best that exists and make it better. If it doesn't exist, create it. Accept nothing nearly right or good enough."

—Sir Henry Royce

misalign the leadout guide placement vertically when installing the wing tip. Be careful when you sand the wing and the mating tip surface; keep the mating surfaces vertical. It is very easy to sand just a little too much and put in an angle that will induce an error in locating the vertical leadout position.

Before leaving the trim discussion let me inject a word of caution or advice on a general point that has bitten me more than a few times. As I've gone through initial trimming, many times I've settled on a setting such as tip weight, C/G, flap tweak, etc. The problem is that after making an adjustment to one parameter and seeing a noticeable improvement, I didn't revisit some of the other settings.

An old friend, Bill Simons, prophetically said, "The only time you don't keep trimming a Stunt ship is when you hang it up for the last time." The message is clear: No trim adjustment is *ever a final setting*. All adjustments are interrelated and when you make any trim change be certain to re-check all the other trim settings to see if the new one adversely affects the others.

Motor run thoughts

Over the years, the more I learned about running the piped engines the more I realized that it was critical to even the engine run; upright and inverted. The difficulty in finding the exact setting is that the newer engines have such powerful suction that there seems to be a "broad neutral band." The first method that I knew of to even out the engine run upright and inverted was to time the upright laps and the inverted laps and adjust the vertical tank position based on the differential. This worked up to a point, but in the piped application it proved to sometimes be deceiving.

Another approach evolved when I noticed that the loops were a better indicator for evening the run. But I had to evaluate the loops in wind. Calm air would not stress the engine enough to give a good indication. What I looked for was more the *feel* of the plane once I got close. It's easy to observe a "hard" run one way and a "soft" run the other. But as you fine tune, consistent and even speed and drive are the best indicators. You'll know you have it right when the engine has the predictable break in all the right spots. To put a finer point on this, that characteristic will now hold in "heavy" air. In fact, that is one of the real secrets of being able to fly in turbulent high wind conditions.

Tuning the evenness of the run obviously requires moving the tank, adjusting the engine characteristics with head shims, venturi size, venturi filtering, and fuel nitro content, not to mention prop magic. That's a whole different discussion.

So just addressing the tank location, how do we get started? In the days of the Fox .35, we had a standard feed line location that was 1/2-inch above the mounts. Maybe at that time that was a result of most fliers using the popular Veco T-21 series of 1-inch-thick tanks, which had the feed line exiting the tank 1/2 inch in the center. You would put the tank on the mounts and everything worked ok! Or did it? To be honest, I'm not sure I knew enough back in the fifties to say that with certainty.

Anyway, I'd like to share the method that I use. It makes sense to me and I've used it for many years. What I was looking for was a repeatable method of presetting the tank location and making predictable, precise adjustments. To do this, I needed to be able to measure accurately the same way every time. This approach led me to use the depth probe function of a dial caliper. The obvious points to measure would be the tank and the mount. But the top of the tank would not be consistent, because the thickness might vary.

The feedline is the most reliable measuring point, but it is important to remember to use the top of the feedline as the starting point for the measurements when looking at the bottom of the airplane. You probe from the engine mounting plate to the top of the feedline, measured from the bottom of the model.

This measurement may vary from engine type to engine type. My preference is the PA engine series and they set the same from the .51 to the .75 (with pipes) at .495. This number has proven to be so reliable that many times the initial setting holds for the life of the model. Also, as I varied capacity by changing the tank thickness—as long as the feedline was centered—the measurement held true.

All this measuring is predicated on a front end design that provides adjustment that allows moving the tank up and down in the model to accommodate varied tank depth and the magic number of .495. Think about the procedure and give it a try. It is proven and it does work. I've found that by using this measurement technique you can make subtle adjustments with .010 shims with confidence.

Final comments

Just a few thoughts in closing on the Caudron 5/6/9 presented here. For many styles of flying this version has proven the best in varying conditions. It is a high-drag, power-demanding plane that I've flown successfully with the PA .61, .65, and .75. Thus far, the .75 has taken it to a higher level of performance. It's a big model, but that is what you're looking for if you're considering going to the big engines.

Over the years, I would not have enjoyed this hobby or progressed as far without the help of some good friends. Al Rabe taught me how to build light and coached me to fly accurate patterns.

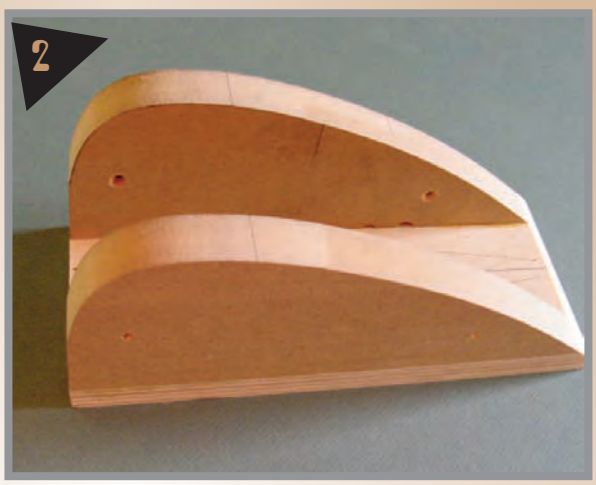
John Hill built the Super ST .60/Como variants and coached me for many years. Keith Trostle had many inputs in the early years. Bob Hunt provided the wing technology and lots of technical information. Finally, Randy Smith gave so much with the outstanding PA engines and solid technical advice. My sincere thanks go out to them all for their friendship. You don't make this journey alone!

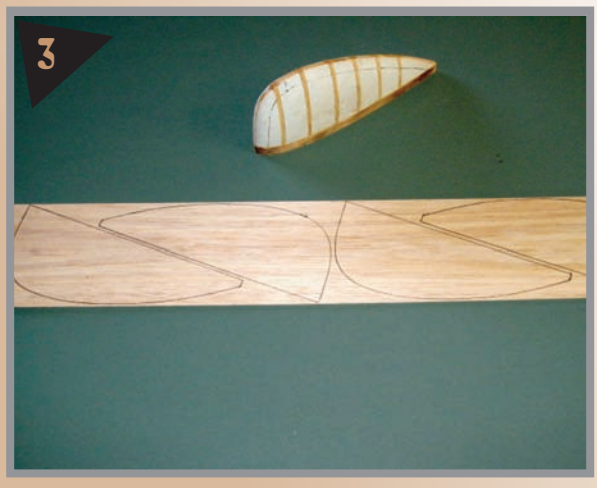
And finally remember in the words of Sir Henry Royce, co-founder of the Rolls Royce Motor Company: "Strive for perfection in everything. Take the best that exists and make it better. If it doesn't exist, create it. Accept nothing nearly right or good enough." SN

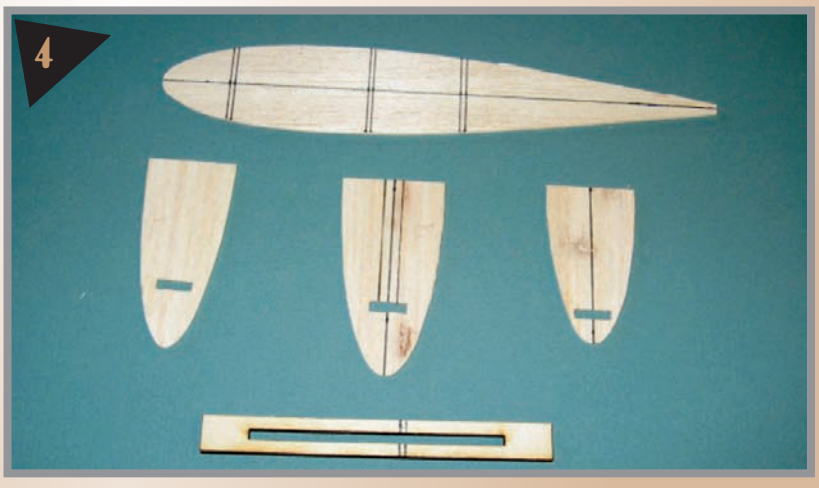
Making Molded Wingtips

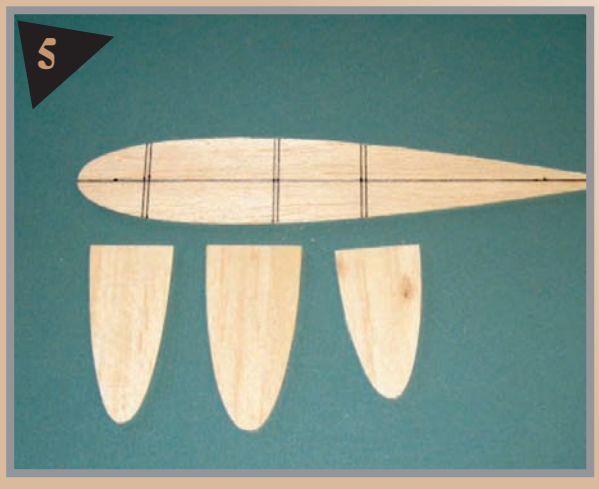
By John Callentine

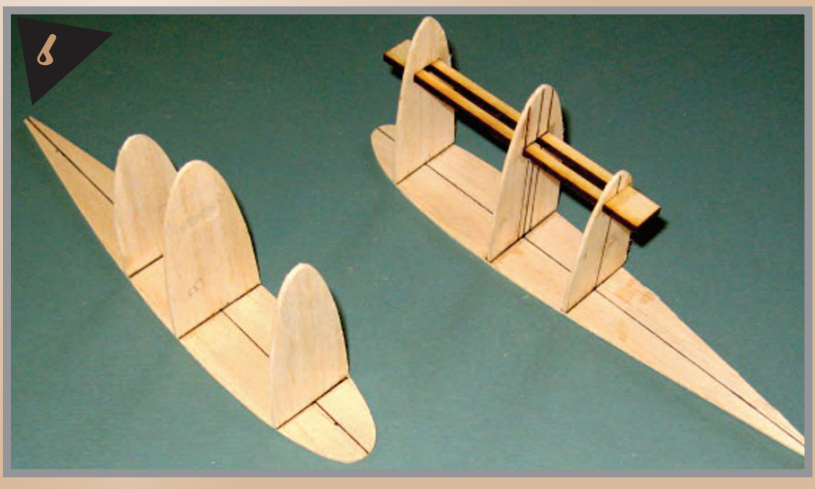
Here's a method of making molded wingtips that I've been using on a series of Caprices I've built. It should work on any design that requires a deep tip that would normally be carved from a block. Basically the tip consists of 1/16-inch molded shells over a simple framework of 1/16-inch half ribs with the outer rim laminated from 1/16-inch strips and a small solid leading edge block. A standard plywood sliding leadout guide in the inside tip and a weight box in the outer are included. This may seem like a lot of work for a wing tip, but it has some advantages. For one, you can use up those short scraps of nice light wood you've been saving—you don't have to find a block of 4 pound density wood and make sawdust out of it. Also it yields a very accurate, light, strong, and *repeatable* part. The inside tip shown here weighs 13 grams with the plywood slider; the outside weighs 16 grams of which 11 grams is the weight box. There are two fixtures required. One is the mold buck used to mold the shells. (See Fig. 1.) The mold buck is made using Bob Hunt's method. A 1/8-inch balsa sheet cut to the outline of the tip and series of 1/8-inch balsa half ribs in the cross sectional shape of the tip are glued to a 1/2-inch thick plywood base the





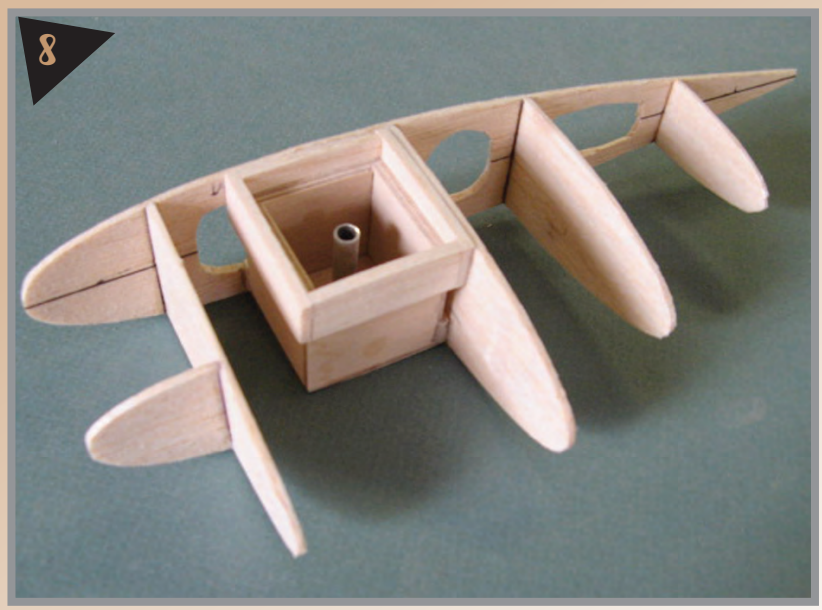


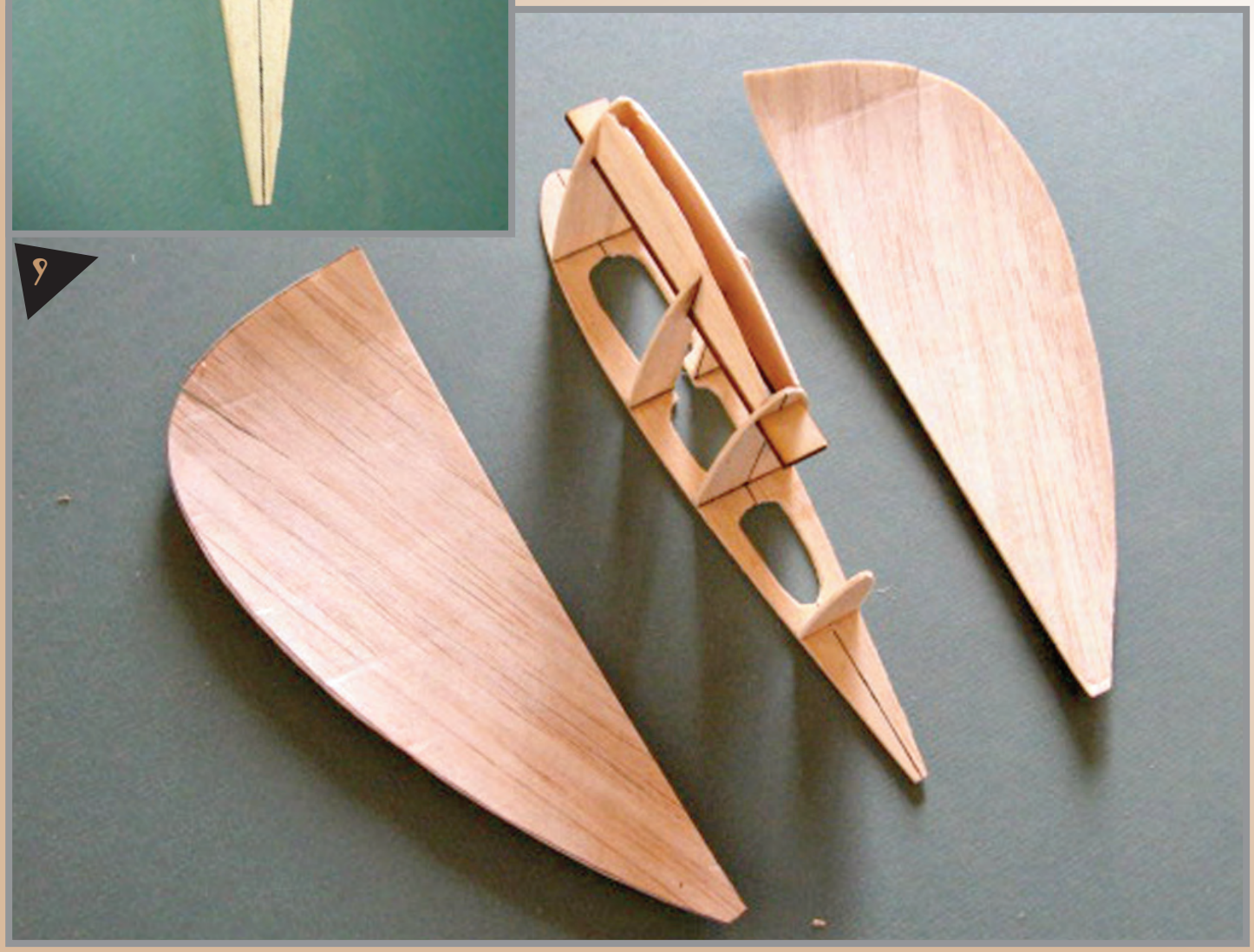




exact shape of the tip rib of your wing. Space them an inch apart then fill in between with blue EPS foam and sand to the shape of the tip.

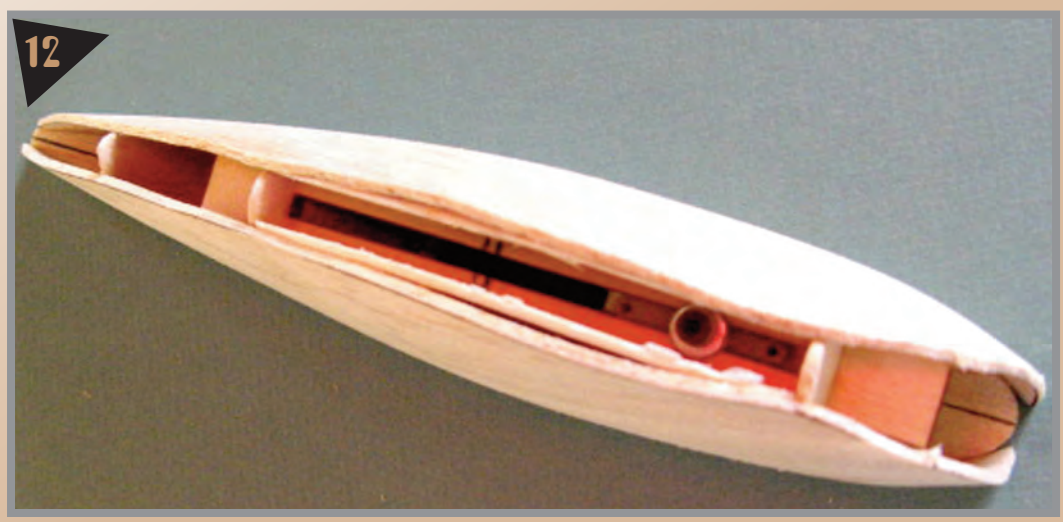
The second fixture (see Fig. 2) is a sanding jig also used to mold the laminations for the rim. This consists of two pieces of 3/4-inch thick wood (I used MDF) cut 1/4-inch smaller than the final shape of





the tip (in plan). These are attached to a rectangular plywood base, spaced about 1/4-inch wider than the thickness of your tip. For the Caprice tip I made a flat spot parallel to the leading edge of the wing to attach a block. Your tip shape may not need this.

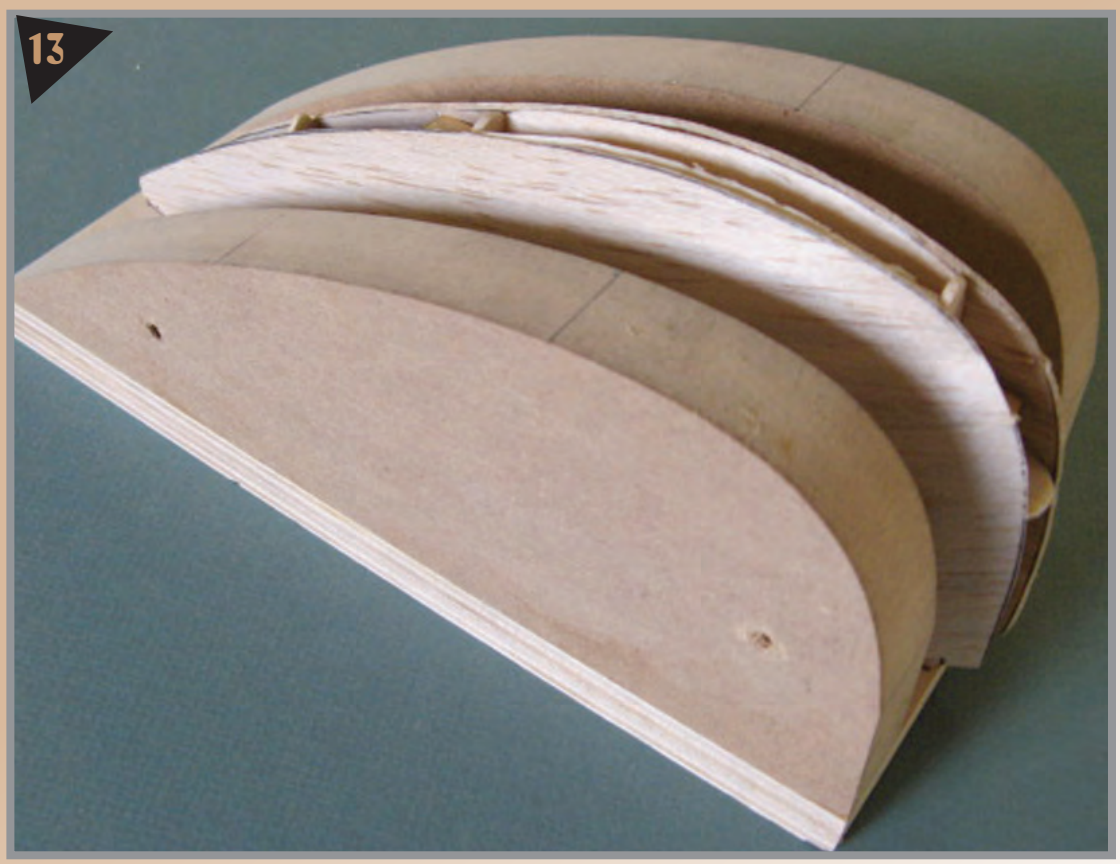
The first step in the production of the tip is molding the shells. Cut them from light A-grain 1/16-inch wood, orienting the grain parallel to the tightest bend radius of the surface. (See Fig. 3.) You might need to cut out a small wedge to prevent buckling. Practice with a paper pattern. The outline doesn't need to be precise because it will be trimmed to fit after assembly. Just don't let it hang over the edge of the buck. Mold them in the regular way, soaking in hot water and ammonia for about 10 minutes and wrapping them on the buck with an Ace bandage. I do one on each side of the buck at the same time.

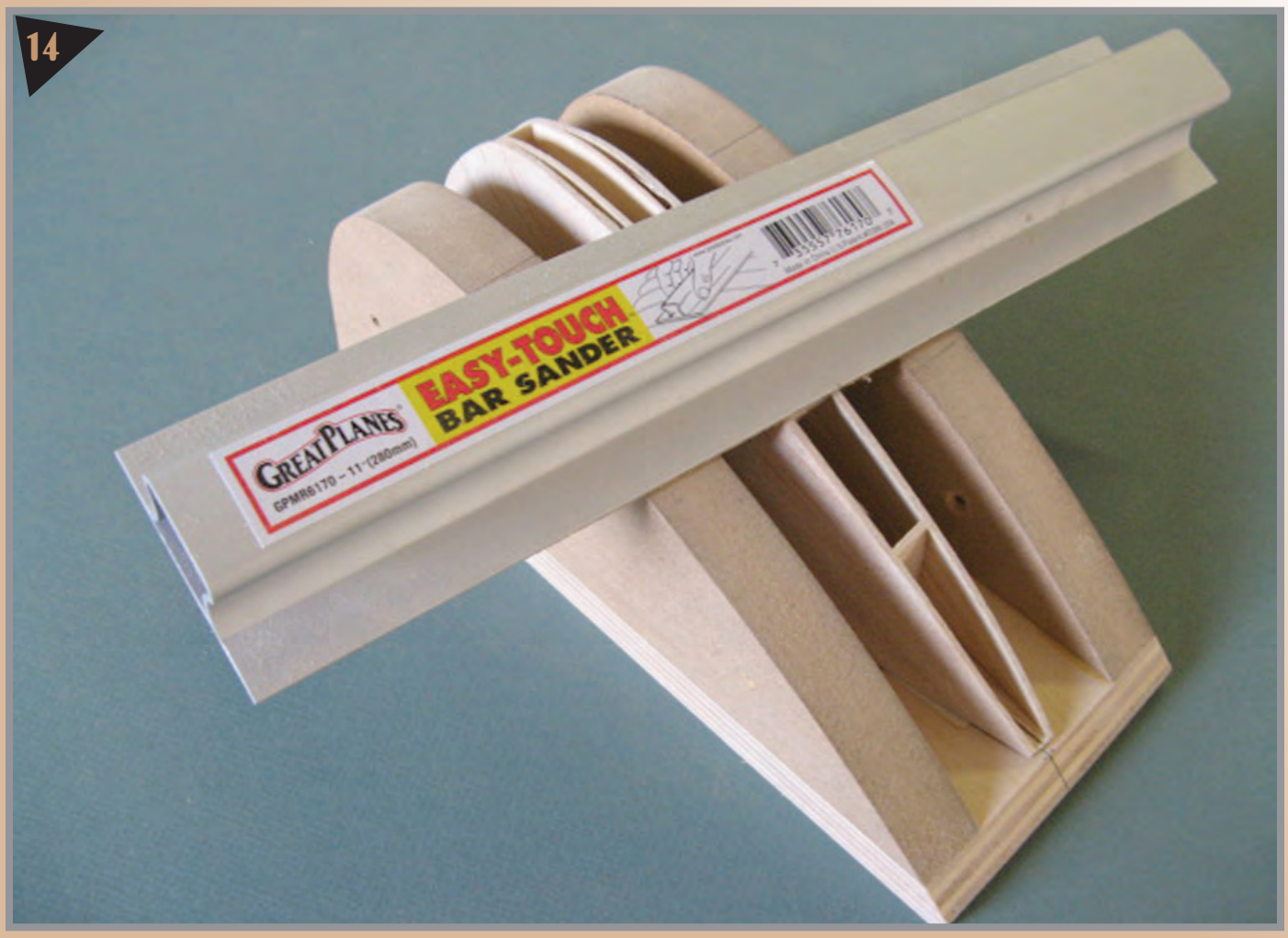


Next make the frame parts. (See Figs. 4 and 5.) The base is a rib that matches your outer wing rib. This should be 3/32-inch thick to allow for sanding it to fit perfectly. The half ribs can be cut from 1/16-inch stock. Three or four of these seem sufficient to hold the shape. You can add them as needed. The location of the

half ribs is only critical at one place on the inboard tip. There should be one at each end of the leadout guide slot. You can determine this on your plan view. These ribs each have a 1/8 x 1/2-inch slot to hold the plywood guide. (I used a Brodak adjustment fixture. See Fig. 6.) The rib in between has the same slot and will also be slotted more later on for leadout clearance.

Glue the half ribs to the base making sure they are square. Two more parts complete the frame. These are 1/16-inch pieces that form the sides of the leadout slot. (See Fig. 7.) Be sure to space them to clear the sliding washer.



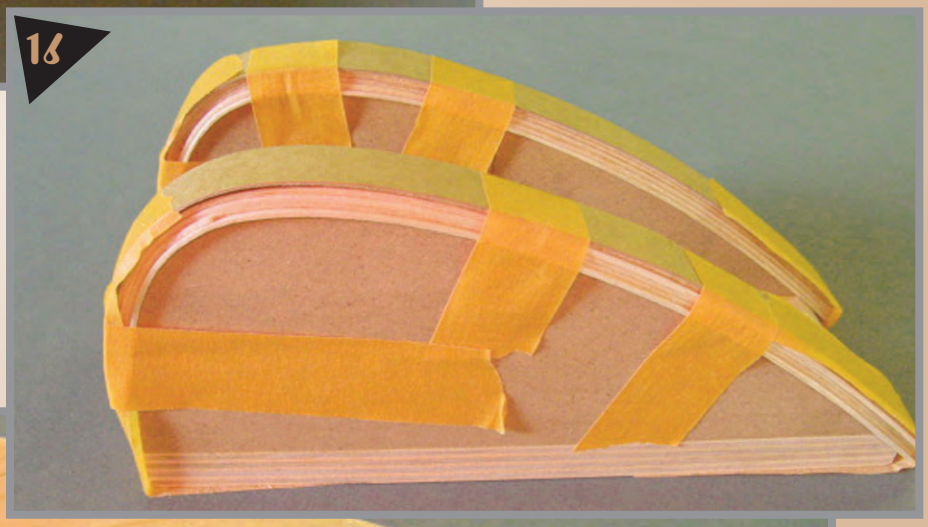


The outboard tip gets built in the same manner, but without all the slotting and including a tip weight box. (See Fig. 8.) You can now cut the slot for the leadouts and some holes in the base rib to allow for gluing from the inside.

Once your shells are dry you can glue them to the frame with CA glue. Be careful not to distort the base rib as you go. (See Figs. 9 and 10.) Let the shells project a bit past the base rib then sand flush after completely gluing all joints. (See Fig. 11.) The outer edge of the tip might look a bit lumpy at this point but keep going. (See Fig. 12.) Place the tip in the sanding jig using double faced tape to secure it. The leading edge of the base rib should project 1/4-inch past the end of the jig. (See Fig. 13.) Sand the tip flush with the contour of the jig. (See Fig. 14.)

Next make the laminations for the outer rim. They should be about 1/8-inch wider than the widest place on the sanded edge of the tip. I used 5 strips of 1/20-inch balsa on this one but 1/16-inch also works fine. (See Fig. 15.) Soak them in hot water and tape them over the sanding jig. I put a strip of cardboard over them because the tape won't stick to the wet wood. (See Fig. 16.)

When dry you'll have a set of strips that fit perfectly on the tip. (See



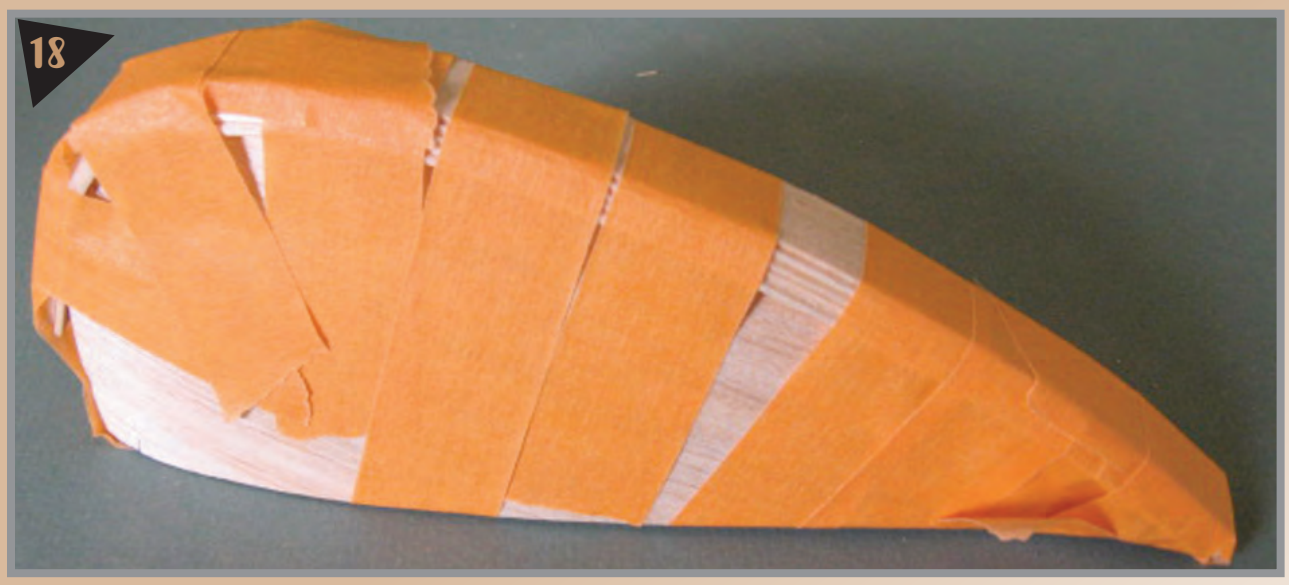
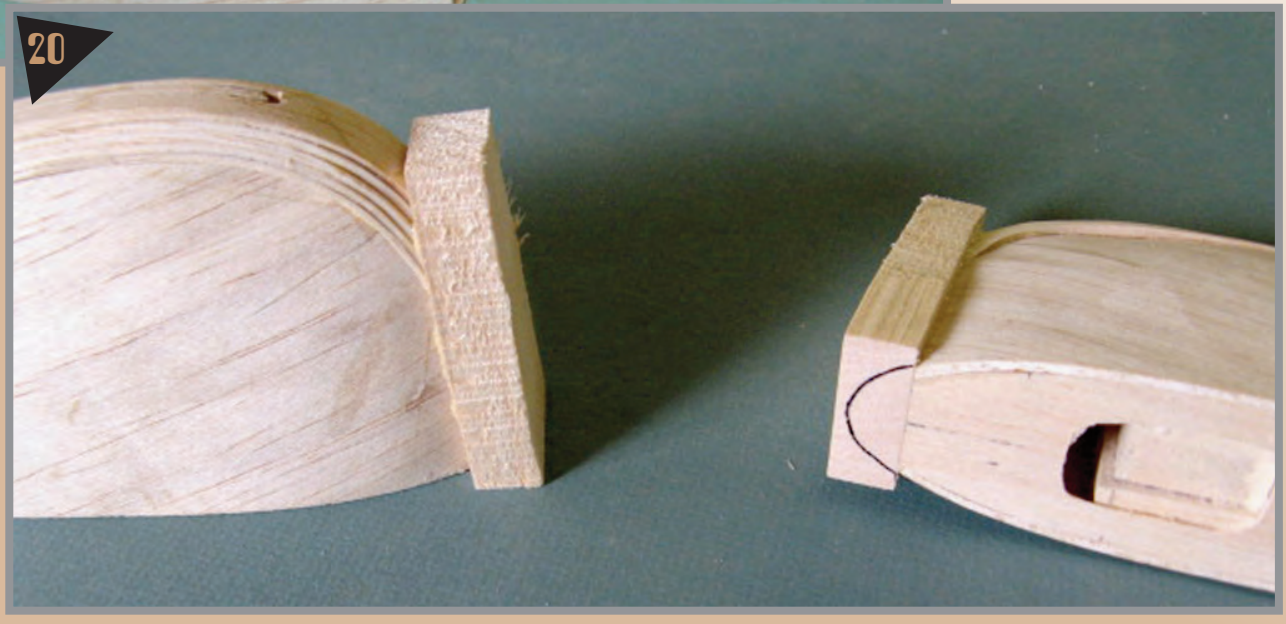


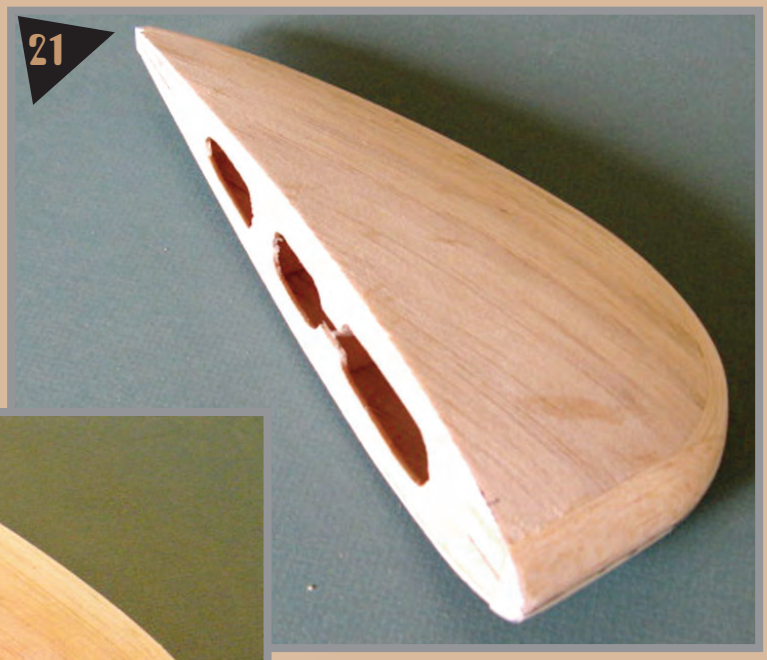
Fig. 17.) Glue them together and to the tip with polyurethane glue. It gives plenty of working time and is very easy to sand. Tape very securely making sure there are no gaps between strips. (See Fig 18.) Note that the strips don't go all the way around the leading edge.

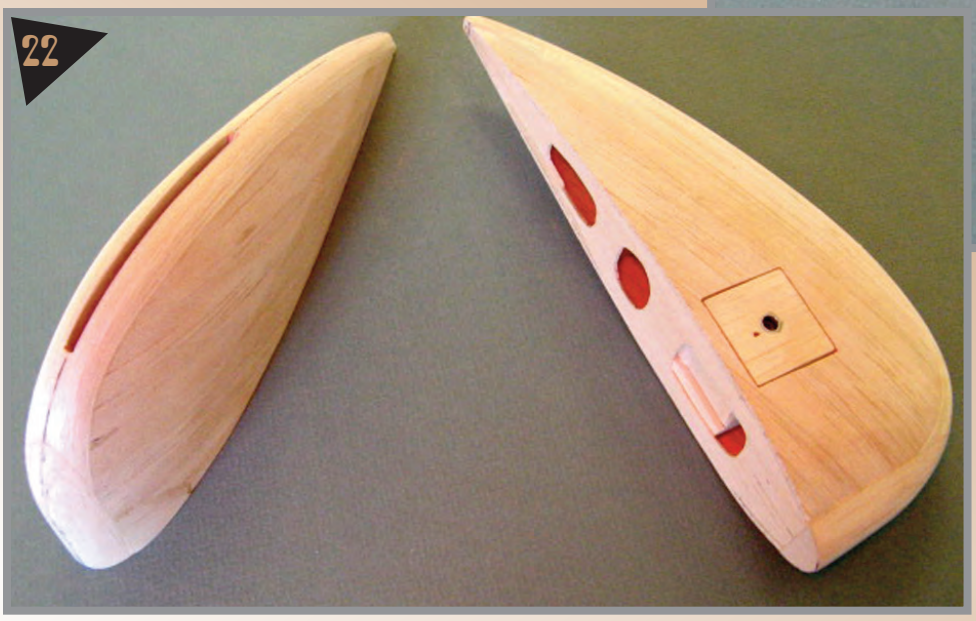
When dry place the tip back in the sanding jig and sand the flat on the front. (See Fig 19.) Glue a block of soft 3/8-inch balsa on the flat and sand flush with the rib surface. Hold the tip in place on your wing and trace around the leading edge. (See Fig. 20.) Now you can carve and sand the edge to shape. (See Fig.



21.) It helps to draw a center line around the tip. I leave the final shaping of the block until the tip is glued in place. Cut a 5/32-inch wide slot for the leadouts and line it with 1/64-inch plywood top and bottom. This leaves just enough room for the Allen wrench. Make the lid for your tip weight box and sand it flush. True up the base rib and the end of the wing for a perfect joint. The tips are now ready to install. (See Fig. 22.) I use yellow carpenter's glue, wetting the joint lightly first, taping the tip in place until dry. It should fit very well and require minimal sanding to blend flush with the wing sheeting. (See Fig. 23.)

I hope someone actually tries doing this. *(I know I will! —Ed.)* Let me know how it works for you. SN





"I hope someone actually tries doing this."

E-Stunt

By Rudy Taube

Set-Ups for your Electric CLPA Plane

One of the easiest and most reliable ways to enter the wonderful world of electric CLPA is to use one of the same well-tested electric power systems that are used by other electric CLPA pilots. The setups below have all successfully flown the complete CLPA pattern. Several have won trophies at contests and have over 400 flights on them.

We started this list over a year ago. Crist Rigotti was kind enough to formalize the list on Robert Storick's excellent Stunt Hangar Forum. These set-ups should be a help to those who are wondering what components to use to convert their favorite CLPA model to electric power, and also those who want to design their own electric CLPA plane from scratch.

This list contains setups for different size planes, Classic, Old Time, CLPA normal, and extra large. As you can see, I have listed some aircraft more than once to show that there is more than one setup that works well. We are very lucky to be able to benefit from the wonderful collection of electric components that are available to the large electric RC market, and from the experience gained from that part of the model world.

Model: Top-Flite Nobler ARF by Andreas

Wing area: 500 square inches
Flying weight: 45 ounces
Motor: Turnigy 35-48 900 kv
Battery: Flight-Max 2200 mAh
ESC: Castle Creations Phoenix-35
Timer: Own
Prop: APC 12 x 6 "E"
RPM: 8400 rpm
Lap time: 4.9 to 5.0 seconds
Line length: 60 feet eyelet to eyelet
Flight time: 5:15 minutes
Power consumption: 1700 mAh

Model: Brodak Vector 40 ARC by Alan Hahn

Wing area: 536 square inches
Flying weight: 46 to 47 ounces (depends on spinner I am using)
Motor: Scorpion II 3020-780 (kV=780 rpm/volt)
Battery: FMA 4s 2100 mAh (18C), weight 6.9 ounces!
ESC: Castle Creations Phoenix-45, running in Set RPM Governor mode, 26 kHz PWM rate, low motor timing
RPM: 7600 rpm at takeoff, 8000 rpm while flying
Timer: Will Hubin for setup (flight time, rpm changes are easy), JMP-2 for "standard" pattern flying. 300s flight time.
Prop: APC 12 x 6 thin electric tractor
Lap time: 5.1 to 5.2 seconds per lap
Line length: 61-feet eyelet to eyelet
Power consumption: 1450 mAh (depending on wind)

Model: Gieseke Nobler—From Plans by Will Moore

Motor: AXI 2826-10
Battery: Thunder Power 4-cell 4000 mAh
Prop: APC-E 12 X 6
Timer: JMP 3rd Gen.
ESC: Jeti

Model: Brodak Oriental ARF by Archie Adamisin

Wing area: 550 square inches
Flying weight: 48 ounces
Motor: Rim-Fire 35-30-1250
Battery: Maxx Amps 20C 4S 3000
Power consumption: 1750 mAh used on average
ESC: Castle Creations Phoenix-60
Timer: JMP-2
Prop: APC 10 x 5 "E"
RPM: 10,980
Lap time: 5.15 to 5.2 seconds
Line length: 63 feet eyelet to eyelet
Flight time: 5:30 minutes
Note: This was a test for a lighter system for the Swinger and some other Classic 35-sized models we had in mind.

Model: Brodak ARF P-40 Profile by Rudy Taube

Wing area: 560 square inches
Flying weight: 57 ounces
Motor: AXI 2826-10
Battery: Thunder Power 4S 4200 mAh (14.8V)
ESC: Castle Creations Phoenix-45
Timer: JMP 3
Prop: APC-E 12 x 6 pusher
Lap time: 5.0 seconds
RPM: 8,800 rpm (Slow motor speed ramp-up for takeoff and first two level laps)
Flight time: 5:20 minutes, plus 25 seconds @ 0 RPM to get out to handle (5:45 total time)
Line length: 62 feet eyelet to eyelet
Power consumption: 2,500 to 2,700 mAh used per flight (depending on tricks done after Clover)

Model: Primary Force by Crist Rigotti

Wing area: 500 square inches
Weight: 38 1/2 ounces
Motor: Scorpion 3020-16
Battery: Gadex 4S 2200 mAh
ESC: Castle Phoenix 35A
Timer: JMP-2
Prop: APC-E 13 x 4 cut down and re-pitched to a 12 x 5
Line length: 58 feet
Flight time: 5:45 minutes
RPM: 9500 rpm
Lap time: 5.2 seconds
Power consumption: 1850 mAh

Model: Brodak ARF P-40 Profile by William DeMauro

Flying weight: Low to mid 50 ounce ranges
Motor: Scorpion 3020-14 944 KV
Battery: Polyquest or trueRC 4s 4000 mAh
ESC: Phoenix-45
Timer: Will Hubin timer
Prop: APC 12 x 6E
Line length: 61 feet eyelet to eyelet
Lap time: 5.1-5.2 seconds
Power consumption: 2300 mAh back in pack
RPM: 9000 rpm Set RPM Mode
Flight time: 5:30 minutes

Model: Electric SV11 by William DeMauro

Flying weight: 64 ounces
Motor: Scorpion SII-3026-890 V2 Brushless Motor (now)
ESC: Castle Creations Phoenix-45
Timer: Will Hubin Timer
Prop: APC 12 x 6EP
Line length: 65 feet eyelet to eyelet
RPM: 9300 rpm Set rpm mode
Battery: Polyquest RC 4s 4250 or FlightMax 4s 4400
Flight time: 5:33 minutes
Power consumption: Back in pack 2800 mAh
Note: This is what I am flying with as of 7/23/09.

Model: Brodak Electric Super Clown by Alan Hahn

Wing area: 355 square inches
Flying weight: 28 ounces
Motor: Scorpion 3020-12 (kV=1088 rpm/volt—stock) (5.4 ounces)
Battery: FMA 3s 2100 18C Lipo (5.5 ounces)
ESC: Castle Creations Phoenix 35A ESC
Timer: JMP-2 timer
Prop: APC TE 10 x 7 stock
Line length: 58 feet .012 eyelet to eyelet
Flight time: 300 seconds (Does not include 20-second wait after arming the timer.)
RPM: 8500 rpm
Lap time: 4.8 seconds per lap
Power consumption: 1560-1600 mAh put back in according to charger

Model: Impact XLS by Paul Walker

Wing area: 750 square inches
Weight: 69 ounces
Motor: Plettenburg 30-12
Battery: Thunder Power 5S2P4200 brick pack
Timer: Kim Doherty Processor
ESC: Shultze 18.46 F2B ESC
Prop: Yatsenko knock-off Carbon prop 13.6 x 7 (Some parts of the prop are at more than 7, some less than 7.)
Lap time: 5.3 to 5.4 sec./lap
RPM: 8,650 rpm
Line length: 70 feet
Power consumption: 3000 mAh per flight
Flight time: 6:13 minutes
Note: Now flies much better than it flew at the 2007 Team Trials. It would be a definite contender at any contest. Now if only the wing would have come off, it would have gone to France! Ugh …

Model: Barnstormer by Crist Rigotti

Wing area: 470 square inches
Weight: 32 ounces
Motor: Scorpion 3014-22
Battery: Rhino 4S 1550 mAh
ESC: Castle Creations Phoenix 35A
Timer: JMP-2
Prop: APC-E 11 x 5.5
Line length: 52 feet
Flight time: 4:40
RPM: 9200 rpm
Lap time: 4.9 seconds
Power consumption: 900 mAh

Model: CAP-21 Semi-Scale by Rudy Taube

Wing area: 688 square inches
Motor: Plettenburg Orbit 30-12 (with fan and front mount)
ESC: Shultze 18.61 F2B (Preset for CLPA FAI)
Battery: Hyperion G3 CX 5S (18.5V) 4,000 mAh 25C (charge at 5C), $128
Timer: Kaz/FMA, 3 button with setup box, from Randy Smith (Aero Products)
Flying weight: 73 ounces
Prop: APC-E 14 x 7
Line length: 67 feet eyelet to eyelet (.018 cables)
Lap time: 5.3 seconds
RPM: 8,700 rpm

Model: Brodak ARF Cardinal Profile by William DeMauro

Flying weight: low to mid 50 ounce range
Motor: Atlas 2921-08 (I believe about 1100 KV.) (AXI 2826-10 also works well in this plane.)
Battery: Polyquest or trueRC 4s 4000 mAh
ESC: Phoenix 45
Timer: Will Hubin timer
Prop: APC 12 x 6E cut to 11.5 inches (for clearance)
Line length: 61 foot eyelet to eyelet
Lap time: 5.1 to 5.2 seconds
Power consumption: 2300 mAh back in pack
RPM: 9000 rpm Set RPM Mode
Flight time: 5:30 SN

TUNED PIPES FOR CL AEROBATICS

By David Fitzgerald and Brett Buck

Brian Eather asked us to write an article on general setup of tuned pipe engines. Since then, Brett Buck and I have come up with this general guide for tuned pipe setups. There have been several very good articles over the years, notably, "The Golden Age of Stunt," published in *SN,* and "The Care and Feeding of Stunt engines," both by Randy Smith, and of course the motorcycle classic, "Two-Stroke Tuner's Handbook," by Gordon Jennings. I would start by rereading the first two articles by Randy Smith. These will cover about 90% of any tuned pipe engine setup you will ever need to know.

What follows is fairly generic and not specific to any particular engine, however I will later give you our setups for several engines.

There are many different tuned pipe setups. Traditionally, we use the tuned pipe much differently than racing, RC, or motorcycle setups. We use the tuning effect of the pipe to help control the speed of the engine, and thereby the speed of the model through its flight. The way the engine runs is affected by many different variables. This is why it is difficult to write about, but in practice very easy to set up. Just some of the variables are heat range of the plug, pipe pressure, metal or clunk tank, percentage of nitro in the fuel, percentage of oil, type of oil whether more or less synthetic, shape of the combustion chamber or head shape, compression or number if head shims, how many intake ports and where they are aimed, what type of spray bar/venturi, and intake/exhaust timing, oh and pipe length too.

Just to be clear, piped setups are not more complicated than a muffler-type engine. Most of these variables affect any system. If you are hesitant to run a pipe ship because it is complicated, that is just not true. In fact, the only real difference is the pipe length, and that's generally the easiest part to get right.

You can set up an engine for several styles of run:

1) A two-four style break
2) A soft to a hard two-cycle or
3) A very deep four-cycle.

We use a specific pipe length to either retard the engine timing when the plane speeds up, or to have the engine break or break harder when the plane slows down. In good air, this is not really any different than a 2-4 break scavenged engine. The big improvement comes in less than ideal weather, namely big wind days. As the wind effects the plane, the pipe regulation helps keep the plane at a more ideal constant speed through the maneuvers—coming on when slow, or backing off when fast, or just one speed.

The idea is that when you are at the optimum pipe length, the pressure wave in the exhaust bounces off the baffle in the back of the pipe and arrives back at the exhaust port on the back of the engine just as the new intake charge starts to vent though the exhaust port. Thus the pipe length effects this timing—which is directly determined by the speed of sound under the particular exhaust temperature, which also effects the effective timing of the exhaust/intake ports by packing in more charge for the next compression stroke.

You can also see how the run characteristics could be affected by the heat range of the plug, and other attributes such as when the charge ignites. The amount of nitro effects how fast the mixture burns, the shape of the head to help to control the rate of burn, amount of oil for cooling—which again effects the plug, ignition timing, nitro all over again, not to mention the head clearance which determines the maximum amount of compression. You can get a variety of head shims from most of the engine manufactures to change this variable. We effectively use the pipe to control the engine timing, and where, and how hard the combustion characteristics change with the type of pipe.

You might think that with all of these variables, you could never get the engine to run the same twice. You would be wrong. A good reliable pipe setup, with no tank or pipe leaks, is very repeatable and very stable over hundreds of runs. It turns out that many of the variables can be moderated by the pipe regulation itself. Once I arrive at a setup, I very rarely change it, except in extreme weather circumstances. Some atmospheric variables that effect maximum BMEP, or Brake Mean Effective Pressure, also effect full-scale aircraft, namely density altitude, which is the density of the air and amount of humidity. Again, this can be moderated and the adjustments are usually no different than any other engine. Ways to moderate the effect of a high-density altitude are: larger venturi, fewer head shims, more nitro, and a slightly shorter pipe.

The size of the pipe also affects how the engine runs. Some of the variables are, pipe volume—which seems to effect torque; pipe length—which effects ignition timing; pipe taper and rear cone shape—which can affect how touchy the engine is to trim changes, or if it has a wide band of tunability versus a very narrow range of RPM. This can be demonstrated by the OS40VF setup in the table at the end of the article. In general, if you want higher RPMs, the pipe will be shorter, lower RPMs the length will be longer. When you get too far off optimum length, you can use the pipe to literally shut the engine off like a switch. Too much charge in the cylinder and you can put out the plug. Not really a good option during an official fight.

Also, most of my setups use pipe pressure. The larger pipes don't generate much pressure, but I think they run just a little more consistently. Again, in good air it doesn't really make a difference, however in a lot of wind, pipe pressure does a much better job of regulating the fuel pressure to the engine. If you run the uniflow tube vented to atmosphere in a lot of wind, the engine will richen up a lot coming into the wind, and go very lean flying away from the wind, an added complication you really don't need. Pipe pressure is really very simple, but does add another level of complexity. If you

develop a leak, it won't change how the engine reacts, but the leak effect will be magnified. Normally I run pipe pressure to the uniflow vent, and cap the overflow line normally.

In very general terms, when you know the optimum pipe length, you can affect how hard the engine comes on by shortening the pipe in ¼-inch to ½-inch increments. You can also affect how much the engine backs off coming down hill by lengthening the pipe by the same amounts. There are also several different resonant nodes along the pipe length, meaning, at extreme adjustments, you may find another length that works.

In very general terms, in this order, there are four parameters that you can adjust to change how your engine runs:

1) Set the head clearance. Head shims will determine *how hard* your engine breaks. Each engine comes with a certain amount of head clearance/number of shims. How the engine is delivered is a good place to start, but each particular engine is slightly different.

I usually set the clearance by number of head shims. (A more accurate way to set this would be head clearance.) Set the shims so your engine breaks how you like it. More head shims, the less or no break, fewer shims the harder the break. You can get to a spot where more shims don't change anything except reduce the power.

The amount of nitro you use in your fuel has a very similar effect. If you want more break, go for higher nitro—which also means more power. The trick is to know how to control how much to use. 5-15% nitro is very common. RO-Jett head clearance can be set with either shims, or better, varying the head button. These are obtainable in various depths from Jett engineering.

The experience with the RO-Jett 61 BSE is that it is very insensitive to head clearance changes. The best recommendation is to use the stock head button with single shims (as supplied) unless you really know what you are doing.

2) Set the venturi size. Venturi size will determine *how much power* you develop. The PAs come with a drill size #12-14 venturi. You can go much larger with more power and the resulting increase in fuel consumption. I generally end up with somewhere around a #7 spigot venturi for PAs.

You can also get too large where the engine is not stable. In other words, it surges on the ground and in flight. Higher-rev systems will permit larger venturis, lower-rev systems will require smaller venturi to ensure consistent fuel suction. Use of a "fuel post" or "spigot" venturi (as described in Frank Williams's *SN* article and extensively discussed and developed since) will permit much larger choke areas (venturi cross-sectional area) before fuel draw becomes a problem, and generally permits much steadier runs for a given power level.

The spigot takes away some of the areas of a particular-sized venturi and venturis as large as a #1 AWG drill with a spigot have proven to be usable on 61-sized engines.

3) Pipe Length. Set the pipe length for your desired RPM range. In general, the pipe length will determine *when* the engine breaks, not how hard. If you want an earlier break-go shorter, a later break-go longer. Very simple.

4) Once you have your engine's comfort zone on RPM and style of break, then and only then, *set the level flight speed with prop pitch*. If you have more power, you may go to larger diameter, but set the lap times using the prop pitch to arrive at optimum, not with the needle valve.

Once you have an optimum RPM range, you can adjust the speed a bit with the needle, but you need to set the optimum lap speed with pitch. This is the main reason why pipe engines depend on the carbon props, so you can make fine pitch adjustments.

Note also that more diameter used to be the only way to use more power, but with current engines it can easily be overdone and cause trim problems. One of the big "secrets" has been to use smaller props than the maximum to help the trim.

Until you get to be a real expert, set the prop pitch to the same setting at all stations (i.e. helical pitch distribution). Interesting effects can be had using pitch settings that vary from station to station, and that worked well on ~6-inch pitch props from the good old days. The problem we have found is that it tends to be *too* effective on piped engines running ~4 inches of pitch, and have dramatic (and frequently bad) effects.

Okay, what does all this mean? It means Brett and I have spent way too much time flying model planes and know more than you really need to know for setting up a flip-and-fly engine. Here are several engines and my setups to try. Some are current engines, some have been around forever. My current setup is the PA 75 five-port engine, the last PA entry in the chart. Brett's current setup is the RO-Jett 61 on the chart as well.

Notes on specific engines

OS40VF: everything that follows is based on use of a dead-stock engine (or very minimal balancing mods, which are probably unnecessary but not harmful). Any significant modifications to the timing or any other performance parameter is *unnecessary* and *should not be done.* The only thing that ever goes wrong with the 40VF is that the bearings (particularly the rear bearing) can go bad after a while from corrosion. This used to be a big problem, because it's some odd-ball proprietary size, but now Boca Bearings has apparently had some made up, in several different types (regular, ceramic, etc). I just use the regular old economy type; seems fine to me.

The setup shown in the spreadsheet was developed by Paul Walker, and is essentially the same as it appears in the 1991 *FM* article on the Impact. I used to run a different setup that ran the engine much harder and worked well for me for years, but I think Paul's is better and certainly more flexible than my original system. It's no accident that he won six Nationals and a World Championship with it.

Set the pipe length up per the spreadsheet at 18.75 inches to the first baffle. The Randy/Billy 40 "slimline" pipe with no resonator (small outlet pipe) seems to work the best with this system. The venturi size matters a lot—all of the sizes shown are for use with an ST60 spray bar. Start with a .265-diameter venturi and the recommended prop. Set the ground revs at 10800. It should be two-stroking at that speed. If not, just shut it off and replace it with a .260. If it's two-stroking go ahead and launch it. You are shooting for 5.3-5.4 second laps, and check the setting. It should be two-stroking in level flight. If it's four-stroking in level flight, even an occasional blip of it, the venturi is too big. If it sags at any point in the pattern, go up to the next .005 bigger venturi.

The goal is to get the engine in a rich to medium two-stroke in level flight at a decent speed, and have it pick up slightly to a solid two in the maneuvers. If you get to a .260 and it's either too rich and the right speed or too fast and the right setting, drop the prop pitch by .1 and try again. New engines will likely wind up with a .260 or .265. As it wears out, or in thinner air, it might need a .270 or even a .275. If you need a .275 and are using 4.25 inches of pitch, watch the fuel consumption as you are near the end of the road for this piston/liner. The good news is that takes a couple of thousand flights.

Once it's working as described, then and only then pay significant attention to the power pickup in the maneuvers. If the engine seems a little soft in the corners, push the pipe in to 18.5. If it charges noticeably, lengthen it to 19 inches. If it seems like it needs to be outside that range you probably have the wrong venturi. Unless you really know what you are doing, stick with 4.25 inches of pitch and 18.75-inch pipe length, and adjust the run if necessary with the venturi size. As with any piped system, once you get a decent pipe setting, it hardly ever needs to change. It worked yesterday it's very likely to work today.

One thing to watch out for are leaks in the pipe, and worse, at the header joint. *Any* tiny leak at the header joint will cause all sorts of havoc; usually it starts 4-2 breaking, and running like it was on suction (faster as the flight runs on). You *must* flatten both the header flange and the engine exhaust flange with 240 grit sandpaper (wet, and stuff a tissue into the hole to prevent grit getting in the engine), then clean it with lacquer thinner, and then seal it with something.

Paul uses/used five-minute epoxy, which seems fine, but I use Permatex "Ultra Copper" automotive exhaust header sealant. This is high-temp silicon, although even regular old silicone bathtub caulk seems to work just as well. It seems pretty hot if you touch it but the header on a 40VF is probably 500 degrees lower than a car header joint. Don't even waste time with regular paper or rubberized paper water-pump gaskets—those are not nearly as durable as the silicone or five-minute epoxy.

As small as it is, and as old a system as this is, it will still pull any reasonably-sized 40-60 model around with good authority. I have switched between the 40VF, the Jett 61, and the PA61, back to back to back several times, and while they are definitely different from place to place in the pattern (and the 40 sounds like a jet turbine instead of a Harley) overall the performance difference is not tremendous.

—Brett

RO-Jett 61BSE: Once again, I use the engine dead-stock, right out of the box from Dub Jett. I have only run the bar-stock version, not the cast-case version. I am told that the guts are the same and my observation of others seems to suggest that the case design makes a significant difference in the run; the bar-stock engines run more symmetrically from inside to outside maneuvers. I have a pretty good guess as to why but will leave that to others to discuss.

After some confusing research, I have found that there are actually three different versions of the engine. The difference is the exhaust duration. The standard motor is 136 degrees (like the PA) and the one sold as the "Brett Version" is 140. The engines I actually have are 144. It seems that the 140 and 144 work about the same and can use nearly the same settings. I have never run the 136 version, so I don't have any experience with that, but I would expect it to work with PA pipe lengths. Also, you can never go to wrong following Richard's directions. The recommended setup uses much larger props at lower revs than mine. The recommended pipe length is on the edge of being too short for the 144-degree engines, but it's on the right side of the edge as long as you keep the revs above 9700 on the ground.

The setup is per the spreadsheet. Oddly, even though the exhaust timing is significantly longer than the PA, it's almost the same as the setup I ran on the PA, and it runs a constant four-stroke like the PA. Other than that, it's night and day different as far as the feel in the air goes. The RO-Jett runs like a giant 46VF aside from the engine note. That's not too surprising as the exhaust duration and crank timing are very similar.

One thing to note is that the engine is *very insensitive* to changes. In particular, the compression seems to be almost irrelevant to the way it runs (other than being hard to start with very tight clearances) at least with the recommended prop. Just leave it alone and leave the head shims in the package.

With the system set as shown, it wants to run 9900 plus or minus 100 or so on the ground. With the light-load 12.5-inch prop it really doesn't unload noticeably, nor does it ever want to break hard or even seem like it changes (although it does). You can use more diameter but that's going to run the RPM down for a given level flight speed since it's more efficient, so you might need less pitch also to maintain the RPM, which will greatly increase the power required and may result in a two-stroke break here and there.

That's probably okay as the breaks are not dramatic, but the intent is to get as constant a four-stroke as possible. For reasons I don't understand, my 1999-2005 airplane preferred 3.9 inches of pitch, and the exact same engine in an airplane nearly the exact same design and construction for 2006-present wanted 3.75 inches. I carry props of 3.6-4.1 inches, and that is all the range I can ever imagine you would need.

Unless there's something screwed up, mine never breaks into a two-stroke aside from the occasional "chirp" until it runs out of fuel. In fact, when it's right, the 144-degree engines occasionally drop into a "second level" four-stroke sound in level flight, with little change in speed.

I have tried many venturi sizes, but I found that at the recommended level of load RPM a "long" #5 venturi with a short spigot and a single-layer panty-hose diffuser works well on 10% nitro at sea level and on 15% at altitude.

I recommend sealing the spray bar to the case on all of the "side hole" type spray bar arrangements. David discovered this when we were running the PA40 but it seems to help all of them to greater or lesser degrees. If it runs okay in the air but surges up and down on the ground, that's a tell-tale sign that you have a tiny pinhole leak around the spray bar.

My engines tend to load up a little if there is too much oil in the fuel, particularly, too much castor. I have had good luck on 10% GMA at sea level but it would load up in the inside corners pretty reliably at altitude. That's why I was out at the L-pad mixing fuel about 15 minutes after sundown at the 2007 Team Trials—I ran out and GMA or Howard's 22% equivalent wouldn't work. I have had the best luck with 18% blend oils, in particular, the PowerMaster 10-18 RC sport fuel (regular old cheap kind). Even that eventually varnishes the engine up inside and begins to lose power.

I had great luck de-varnishing the engine with PowerMaster RO-Jett fuel (almost all synthetic)—in about 10 flights I had picked up a significant amount of power and it retained that through all the flying at the Team Trials and a

few local contests since. I haven't been able to locate a reliable source of quality all-synthetic fuel, but without trying it I think it would be ideal. These aren't Fox 35s we're talking about here. Of course, if the air gets much above sea level and the fuel consumption seems to drop, just go to 12.5% or 15% nitro and leave everything else alone. Ted ran as much as YS 20/20 at the 2004 W/C with no other changes and tremendous power.

—Brett

PA 61/65: I've included both engines here because one setup will pretty much work for both engines. Props, too. I won my first open Nats in 1997 with an early version of the PA 61. It's a wonderful forgiving engine and setup.

You can run the venturi that Randy sends with the engine, probably a #12, or you can run a lot of fuel, develop a lot of power with as large as a #1 venturi, 7.25 oz. of power. Pump me up! When running the larger venturies though, you may need a spigot. This cures a bit of engine surge when transitioning from the inside to outside rounds on the eights.

Also, a trimming note, starting with the 61s and larger, the setups are very sensitive to tank height. The traditional method of setting tank height is to shim it up or down until the level lap times are the same. Well, call this the gross adjustment. You really need to take a look at the speed on inside rounds versus outside rounds. When you can get the engine to not speed up/slow down and stay steady in both, the tank height is good.

If it speeds up in insides, the tank needs to be raised up relative to the top of the fuselage, and vice versa for outsides. A good place to start for these adjustments is in increments of $^{1}/_{16}$-inch shims. Also, make sure you don't have a small restrictive rubber nipple on the pipe exhaust. Make it a large one. You can restrict the engine intake air by either the venturi or the exhaust opening.

If the exhaust opening is the limit, I think the engine is not quite as steady as making sure the venturi is the one doing the regulating. You can test this principal by changing venturi size and getting a change in needle setting and run time corresponding with the change in size of the venturi. If you don't, then your pipe tip may be too small.

Also, use a full length header. Cut the end of the pipe to size it for the proper length. One of the very critical things on the 61s and larger, is heat dissipation. The pipe coupler area is critical. Make sure you have adequate cooling air intake and double the exhaust area with enough air flow over the coupler. The full length header will prolong the life of your pipe. The longer header give you lower temperature exhaust gases by the time it hits the pipe. The difference is just enough so you won't fry the front end of your pipe on a lean run. Cooked pipes leak—which is bad.

PA 75: First, thanks to Randy for all his help over the years. I don't know if I would have been able to win a World Championship without his support. I've talked extensively about my setups on this engine. I'll reiterate a few things here. The engine has been developed over the last few years and has a few changes.

The early engines have a slightly different port configuration than what I like to run, and is different still from what Randy is selling today. All will run very well with Randy's pipe and setup. If you like a deeper four-cycle run on a large diameter pipe with a smallish prop, run the Fitzgerald two intake port liner. However, I am currently running the newest-style engine and I'm very happy with it. You can just order a normal engine and run it any way you like; this has a liner with five ports, or three intake ports. It seems to have a bit more torque and less prone to surges in the maneuvers.

I'd like to thank Brett Buck for significant input and contribution to this article. My hope is that more people will try piped engines and have a good experience with them—that is before we all switch to electrics, but that is another tale still being written. SN

Generic Pipe Setups

Engine	Pipe Length	Fuel	RPM	Prop	Head Shims	Plug	Venturi
OS 46 VF Randy Smith AAC	Smith/Werwage 17 5/8"	Sig 10% Champion, 6.0 oz	10,700	Eather 11.5 x 3.4, 3-blade purple	.008"	Thunder Bolt 4-cycle	.281"
OS 40VF (stock)	Smith/Werewage "40" pipe 18.75	Sig 10% Champion, 4.75 oz	10800-11,000	Bolly 11.75-4.25, cut to 11.25, set to 4.25 helical	stock (do not change!)	Glo-Devil #300 or Thunderbolt R/C	.260-.275 (select to get medium 2-stroke in level flight)
Aero Products PA 40	Smith/Werwage 17 3/16"	Sig 10% Champion, 6.5 oz	10,500	Eather 11.5 x 3.6, 3-blade purple	.015"	Thunder Bolt 4-cycle	#8
Aero Products PA 51	Smith/Werwage 17 ¾" 3-chamber resonator	Sig 10% Champion, 7.0 oz	10,600	Eather 11.75 x 3.6, 3-blade red	.024"	Thunder Bolt 4-cycle	#10
Aero Products PA 61 Series I	Smith Diamond-back 17 3/4	PowerMaster 10-22, 7 oz	10,000	Eather 12 x 3.6, 3-blade red	.024"	Thunder Bolt 4-cycle	#8 spigot
Aero Products PA 61 Series II	Eather #7, 17 3/4"	PowerMaster 10-22, 7.25 oz	9,800	Eather 12.5 x 3.9, 3-blade green	.027"	Thunder Bolt 4-cycle	#4 spigot
Aero Products PA 65	Eather #7, 17 3/4"	PowerMaster 10-22, 7 oz	10,300	Eather 12.5 x 3.75, 3-blade green	.024"	Thunder Bolt 4-cycle	#6 spigot
Aero Products PA 75 Basic	Smith Werwage, 19"	PowerMaster 10-22, 7.75 oz	9,700	Eather 13 x 4.1, 3-blade blue	.028"	Thunder Bolt 4-cycle	#9 spigot
Aero Products PA 75 - 2 port	Eather#8, 3-baffle, 19.25"	PowerMaster 10-18, 8.25 oz	9,500	Eather 13 x 4.1, 3-blade blue	.031"	Thunder Bolt 4-cycle	#7 spigot
Aero Products PA 75 - 2 port	Eather #9, 4-baffle, 19.25"	PowerMaster 10-18, 8.25 oz	9,600	Eather 13 x 4.0, 3-blade blue	.031"	Thunder Bolt 4-cycle	#7 spigot
Aero Products PA 75 - 5 port	Eather #9, 3-baffle, 19.5"	PowerMaster 10-18, 8.25 oz	9,300	Eather 13 x 4.2, 3-blade blue	.031"	Thunder Bolt 4-cycle	#7 spigot
RO-Jett 61 BSE (144 deg)*	Smith/Werewage 51-60 "slimline", 17.5", (use large-diameter stinger)	PowerMaster 10-18, Powermaster RO-Jett 10%, 6.75 oz (low dens. Alt) Powermaster 15-18 (Muncie)	9800-10,000	Eather 12.5-3.75. 3-blade "green"	stock (do not change!)	Thunder Bolt 4-cycle	#5 spigot in "long" venturi

*available in 3 different exhaust durations, 136 (standard), 140 "Brett version", 144 (version Brett actually uses)

The Barton Award

By Cleon M. Lingwood, Jr

As many of you may know, out here in California, we have perpetual award known as the Douglas E. Barton Sportsman of the Year Award. We use this award to recognize those who mow the lawns, attend city council meetings, locate flying sites, CD our contests, and the dozens of other menial tasks that allow the rest of us to merely show up and have fun. If you know Doug Barton, you know why the award was named for him.

The award is presented annually at the Golden State Stunt Championships banquet. However, this year, the winner was unable to attend. So, on October 25, 2009, to compensate for the travel dilemma, a small luncheon and award ceremony was held at the winner's house. The winner of the 2009 Barton Award is Arlie Preszler.

David Fitzgerald formulated an appropriate guest list. Guests included, Doug and Christy Barton, David Fitzgerald, Phil and Kathleen Granderson, Donn Gunzenhauser, Paul Isenhower, Lanny Shorts, Lewis Lingwood, and me. One invited guest, Jim Aron, was under the weather and decided to stay home.

Arlie and his wife Margie graciously allowed the group to invade their home for a few hours. David made a great award presentation as the District X PAMPA representative, chronicling the decades of support and innovation Arlie has offered our sport. A special moment of the afternoon was Phil Granderson making some remarks.

As many of you know, over the years, Arlie has hand-crafted a number of California Redwood propeller trophies that were awarded to the Concours winners at the Nationals. Last year, Phil Granderson won the Concours award with his stunning Zealot design, which was also judged to be a perfect model garnering a 20-point score in appearance. Phil brought the Zealot to the luncheon. As Arlie looked the plane over, Phil announced the plane has been retired. It was the recipient of Arlie's last California Redwood propeller.

All in all, it was a fine afternoon. Lunch was tasty. Everyone picked up after themselves, so Margie did not have to put her house back together! It was an experience listening to the many accomplishments and contributions to the international sport of Precision Aerobatics made by my friend, Arlie Preszler.

The intention of the Douglas E. Barton award is to recognize those who toil diligently at all those tasks that no one else wants to do. These people mow lawns, put on meets, add stuff up, flip the burgers and do whatever it takes so that the flying public (the rest of us) can have a good time. It is not necessary for the nominee/winner to be a flier, competitor, or even a member of PAMPA. Nominees are unsung and the backbone of what we all like to do: fly. The award reads as follows:

DOUGLAS E. BARTON SPORTSMAN OF THE YEAR AWARD
Presented Annually by PAMPA District 10
In Recognition of Outstanding Service, Support and Promotion of Control Line Stunt Competition and Sport Flying

Mission Statement

The purpose of the award is to promote awareness of all those silent, diligent people (Doug Barton as an example, as well as many others) who make our fun possible. The selection committee is made up of four individuals—two from the south and two from the northern states—with the District 10 VP as the fifth or tie-breaking vote. PAMPA membership is not required. Flying or competing is not required. The idea is to recognize those who mow the lawn, put on the meets, and work tirelessly so the rest of us can do our thing!

The award is normally to be presented at the Golden State Championships. SN

Christy Barton, Kathleen Granderson, and Margie Preszler.

Lanny Shorts, Donn Gunzenhauser, and Doug Barton.

The official award.

Okay, on to lunch.

Arlie telling stories about the Nats pilot meetings and Al Rabe.

Phil's 20-point Zealot.

The 20-point Zealot is now retired in honor of Arlie.

Paul Isenhower.

Euro Scene

By Peter Germann

What is the FAI?

The Fédération Aéronautique Internationale (FAI), the world's air sports federation, was founded in 1905. It is a non-governmental and non-profit making international organization with the basic aim of furthering aeronautical and astronautical activities worldwide. Ever growing, FAI is an organization of some 100 member countries.

FAI is 100 nations, worldwide

FAI activities include the establishment of rules for the control and certification of world aeronautical and astronautical records. FAI establishes regulations for air sporting events which are organized by member countries throughout the world. FAI also promotes skill, proficiency and safety in aeronautics. FAI confers medals, diplomas, and other awards to those who have contributed to the achievement of these aims. In achieving these goals, FAI brings together people who take part in air sports from all over the world. They share the delight of gliding, the excitement of parachuting and ballooning, the fun of flying microlights, and exercise their skill in full-size and aeromodelling aerobatics. All FAI Contests, Championships, and Record Setting activities are conducted under the direction of the FAI Air Sport Commissions.

Within the FAI, the International Aeromodelling Commission (CIAM) is responsible for the making of rules for competitions and generally oversees the activities of aeromodelling. Browsing through the calendar of events in 2009 at http://events.fai.org/calendar?id=80 provides the reader with an idea of the size and range of aeromodelling events run under CIAM worldwide.

While administrative work for CIAM is provided by FAI staff located at headquarters in Lausanne, Switzerland, the actual management of CIAM is done by the members of the CIAM Bureau on a voluntary basis. In May, 2009, CIAM officials are:

President: Bob Skinner, South Africa
1st Vice President: Dave Brown, USA
Secretary: Massimo Semoli, Italy
Technical Secretary: Jo Halman, UK

CIAM is entirely controlled by the delegates of National Airsport Control (NAC) organizations from around the world, gathering at the Olympic Museum in Lausanne for their annual *Plenary Meeting* in March. To support the decision find process of the national delegates, a number of *Sub-Committees* deal with issues related to their specific category of aeromodelling. In May, 2009, the Sub-Committees and their chairmen are:

Sub-Committee—Chair
F1 Free Flight—Ian W. Kaynes
F2 Control Line—Bengt-Olof Samuelsson
F3A Radio Control Aerobatics—Michael Ramel
F3B/F3J Radio Control Soaring—Tomás Bartovsky
F3C Radio Control Helicopter—Horace G. Hagen
F3D R/C Pylon Racing—Rob Metkemeyer
F4 Scale Models—Narve L. Jensen
F5 Electric Flight—Emil Giezendanner
F6 Airsports Promotion—t.b.d.
F7 Aerostats—t.b.d.
S Space Models—Srdjan Pelagic

National Airsport Control organizations may delegate members into Sub-Committees and every sub-committee chairman may nominate technical experts to become members of his committee, too. Sub-Committees regularly meet on the day before the CIAM plenary meeting in Lausanne, Switzerland.

Rule Change Proposals

Rule change proposals may be submitted by:

- The CIAM Bureau
- National Airsport Control organizations
- Sub-Committees

Proposals being submitted to CIAM before November 15 will be pre-checked for being formally correct by the CIAM Bureau and will then be put on the Agenda of the Plenary Meeting in March of the following year. Sub-Committees inspect rule change proposals published in the Agenda and are entitled to formulate recommendations on how to vote for the national delegates being present at the Plenary Meeting. Final decision on rule changes is done by voting of the national delegates being present at the Plenary Meeting. Same as within the Sub-Committees, the voting in the Plenary Meeting follows the principle of one vote per nation.

Decisions taken at the Plenary Meeting will be published in the minutes of the meeting and are typically set in force one year later. CIAM aeromodelling rules, known as the "Sporting Code" are re-published every year, with changes clearly marked. Issues of primary interest for both fliers and organizers are:

Bengt-Olof Samuelsson, Sweden: Chairman
Göran Olsson, Sweden: Associate F2A F2C
Vernon Hunt, UK: Associate F2D
Bill Lee, USA: Associate USA & Associate to Chair
Jean-Paul Perret, France: World Cup Coordinator
Claudio César Chacòn, Argentina: Member
Andy Kerr, Australia: Member
Walter Weinseisen, Austria: Member
Guido Michiels, Belgium: Member
Nelson Pedry Mary, Brazil: Member
Kim Doherty, Canada: Member
Jorge Sergio Mendez, Chile: Member
Jiancheng Zhu, Peoples Republic of China: Member
Bohumil Votypka, Czech Republic: Member
Luis Petersen, Denmark: Member
Jari Valo, Finland: Member
Roland Surugue, France: Member
Uwe Kehnen, Germany: Member
Massimo Semoli, Italy: Member
Kazuhiro Minato, Japan: Member
Karlis Plocins, Latvia: Member
Loet Wakkerman, Netherlands: Member
Stefan Kraszewski, Poland: Member
João Loureiro de Sousa, Portugal: Member
Ljubomir Radosavljevic, Serbia: Member
Keith Renecle, South Africa: Member
Yolanda Garcia de Fuentes, Spain: Member
Peter Germann, Switzerland: Member
Peter Halman, UK: Member
Igor Burlak, Ukraine: Member

FAI "Sporting Code" Section 4 - 2009 Edition: www.fai.org/aeromodelling/documents/sc4

General Section of the FAI Sporting Code: www.fai.org/documents/sportingcode/GeneralSection_download

From the above it becomes obvious that national delegates acting in the interest of their fliers shall be present at the Plenary Meeting and it is of equal importance that individuals wishing to contribute to our common cause entertain close contact to their own member of the Sub-Committee. In May 2009, the members of the CIAM Control Line F2 Sub-Committee are:

Everybody is entitled to address the F2 Sub-Committee via e-mail: ciam-f2@fai.org. Messages will automatically be distributed to the Chairman, to all members, and to all associates. SN

The Next Generation

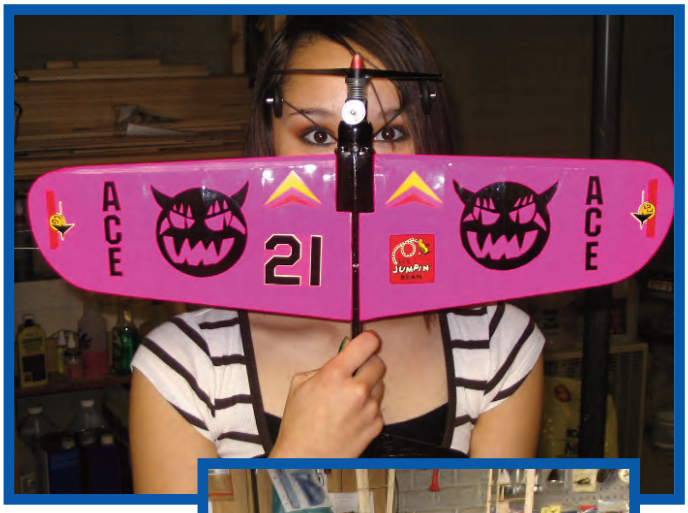
By Matthew Colan

I think you have a more personal attachment to a Control Line plane than an RC airplane.

The Future Generation Discusses the Future: I have asked a few next-generation fliers where they see the future of Stunt going and any ideas they had about the future. Here is what they said:

Grace Paris

Personally I think that Stunt will die unless the younger generation really supports the sport. It was big back in the day, but the advancement of technology and the need for more of an extreme sport is really putting a dent in the interest in Control Line. The older ones who were there for the beginning of the sport are getting even older and losing the capability to fly.



Grace Paris with her Li'l Jumpin' Bean (above), and (R) a Nobler wing.. Grace's father and younger brother are both CL pilots. Far from unfamiliar with the workshop, Grace looks as though she is threatening someone behind the camera!

Humans have a need to explore the unknown and to usher in new innovations. Control Line is getting to be an older sport that has thrived from the love of the participants and spectators. Like at the Nationals, you see a handful of Stunt competitors versus the masses of RC junkies. RC is a newer sport and it seems like it can keep growing to the demands of the younger generation. Control Line really needs younger members to keep the sport alive. It is also a not very well known sport. I would think if there was more exposure to the youth, that some would catch on. You do not see tiny CL planes on Wal-Mart shelves, but you do see the Air-Hogs and such in the toy aisle.

Shawn Cook takes a moment to display his Dave Hemstrought-designed PT-19 at this year's Brodak Fly-In. Shawn made the jump from Intermediate to Advanced this year.

Shawn Cook

I believe the future of Stunt is going to have a lot to offer. There will be changes in airplane designs and more powerful engines available. Technology has provided us pilots with very good power plants which surely are needed for the larger airframes that are in use. I can only hope that this technology can only get better. Surely we're going to see more ARF and ARC planes that are going to be geared for the competitor. Currently, we are starting to see engine/motor/plane combos which I surely feel we are going to see more of. Most spectators that are driving or walking always seemed to be captured by the plane in the air. Maybe there's a chance our hobby may even make it to television. This may lead to more people involved in the hobby as well as manufacturers.

Michael Duffy

I have been flying for about 9 years now and have seen the trends in Control Line model planes that a lot of people have been talking about. I have seen that many new younger fliers choose RC planes first because they are easier to build and fly because they don't need near the patience that is required to get started and sustain in Control Line. I love to build and fly planes and there is no way that I would rather be flying RC. With Control Line you have a more personal attachment to your plane which is how I think it ought to be. You can't beat that feel of sandpaper working the surface of a balsa part on a new model or the smell of dope when you are finishing it. There is nothing worth having that doesn't take hard work. It's the same with model planes.

I really hate to say it, but it is becoming more widespread

to know that the numbers of Control Line hobbyists are diminishing each and every year. That creates a problem because there are not enough younger modelers to be able to keep this wonderful hobby going. I am worried that one day when I am older that there will only be a handful of Control Line fliers left to continue it for as long as they can. I personally believe that there is a big need to have more people of all ages getting interested in this hobby and to continue to fly planes for a long, long time. I personally think, and I'm sure every other Control Line enthusiast would agree, that we don't want to see the future of Control Line lost as a hobby.

Here's a somewhat-younger Michael Duffy with his first Nobler. Michael lives in Tucson AZ and flies with the Cholla Choppers.

Matthew Colan

I believe that Control Line Stunt is growing. Today we have more manufacturers of kits, engines, and hardware than ever before. Now some RC manufacturers are beginning to manufacture Control Line ARFs and engines, like Hobby Lobby, who introduced the new Evolution .36. Saito, who has manufactured RC four-strokes, is now introducing Control Line four-strokes.

In the future, I believe we will see more innovative construction techniques, more powerful engines, more electrics, and more ARFs and ARCs. I believe that "Stunt numbers" will remain similar to today, but the aesthetics will also change with time. Some of the current trends in engine, airplane combinations will become more common.

The one problem I see in the future is getting more kids involved in building. They would generally want to fly something with as little time invested as possible. I think you have a more personal attachment to a Control Line plane than an RC airplane. You *feel the plane* at the end of the lines; you know when a motor isn't right or when it's flying too slow. With RC you have to look at the sticks and the airplane, which is all based on judgment; for Control Line the plane tells you what it's doing, through response you get at the handle.

I do think Control Line has a somewhat bright future ahead. SN

Author Matt Colan poses with his grandfather's (L-R) F-14 Tomcat, profile FW-190, and his Ares.

Ask Ken

By Ken Gulliford

What does it take to change my Control Liner from fuel to electric?

Short Answer: Time, money, skill, and patience (not in that order).

Long Answer: Let me preface this with the fact that I'm no expert on this electric stuff. The only thing that I used to know for sure is that when you hit the ground, the electric motor did not stop. Now, I'm told by people that *are* experts, it does stop, and will after you tip the prop on take-off if you program it that way. Mike Palko, Bob Hunt, Randy Smith, and a host of others have already broken ground on electric Stunt and have a lot more real advice to give than I do. However, I'm just one of you guys, and just want to know what it takes to pull out my Fox .35 and put in a comparable electric outfit.

In conversations with my Dad, who runs a Hobby Shop with his partner Fred from the scenic woods of South Carolina, I asked what it would take to package up a direct swap set-up, electric vs. fuel power. Their shop is mostly RC and mostly electric, and Fred is mostly an expert on all things electric. This was back in 2007, and Fred took me around the shop pointing out different motors, speed controls, batteries, and chargers. They didn't know much about timers, since they are not required for RC planes. But Fred did explain the Power/Watt/Amp/Voltage and rate of discharge situation enough to totally confuse me. It's not his fault; he was quite patient with me and took his time to make sure I was getting what he was saying. It's me, I'm electrically challenged, and although I can identify most terms and items on site, I can't tell you what goes with what or why, and, I gather, neither can most of you. What information that he did give me did not stick, probably because I did not have occasion to use the data and emboss it on my memory. At any rate I did not come up with a package to replace my .35.

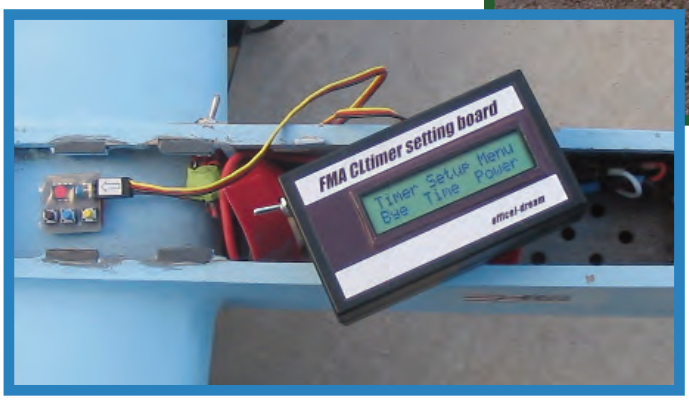
What I told them then was whoever came up with an A-Z package that could be applied to existing Stunt designs using logic like: this package replaces a .35 to a .45, and that package replaces a .46 to a .51, they would make a killing. The biggest part of doing this electric power conversion thing is to understand what you are doing enough so that it all works correctly every time—more or less like your Stunt engine. Well, my idea was correct, but now I find the premise is wrong. It's more like this package will replace a .35 to a .60 depending on your programming and battery (and a few other things).

As luck would have it, I have direct access to three different sources of electric power (and one on-line source) that I will share with you as packages that you can try for yourself, one of them an A-Z set up from RSM Distribution to be applied to one of their planes or one of yours, two packages from independent research, and one as a complete set of single items available Almost Ready to Fly from Brodak.

First, through a series of hand-me-downs I have Mike Pratt's original electric Sig Skyray. (Mike if you ever want it back, say so.) This is an out of the box Skyray with off the shelf independently available items applied to the

LeRoy Black with e-Chizler. If you look closely you can see the additional air scoop at the front of the anti-glare paint on the nose. You will need extra air inlets and outlets for electrics, and the air must also pass over the battery. The outlets are cleverly placed on the belly of the Chizler.

airframe. It is an electric conversion if you will, done to a plane that was designed for and flown by glow fuel engines. (Note: There is a difference between engines and motors. The terms are used interchangeably, but should not be. I'd rather discuss it over a beer, it's more fun.) The motor is a PJS 3D 1200. The Speed Controller looks like a Jeti 40 AMP (the label is mounted to the sticky tape, so I can't see it), and it has a Zigras (Z-Tron) V.2 Timer. The batteries used were a 4-cell 14.8-volt 3300 mAh and a 4-cell 14.8-volt 4000 mAh. You will need to know a little more about batteries, like their "C" rating to have satisfying, safe flying and all that stuff is available on-line for the asking, but 12C to 25C should do it. Remember you get what you pay for, but you don't want more than what you need. The 4000 mAh battery is too big to be of any use other than test flying the Skylark. You can get nearly two flights off one battery and that is weight that you



Above: Nick Lemak with his beautiful e-Skylark. Both Nick and LeRoy are using APC 12x6 Pusher Props with their electrics. See text for details.

Left: Easy programming is one of the neater functions of the FMA Timer available from Kaz Minato. The programmer plugs right into the timer and the multi-colored buttons step through selections to set up the entire flight. Take note of the magnets that Nick uses to hold down the hatch.

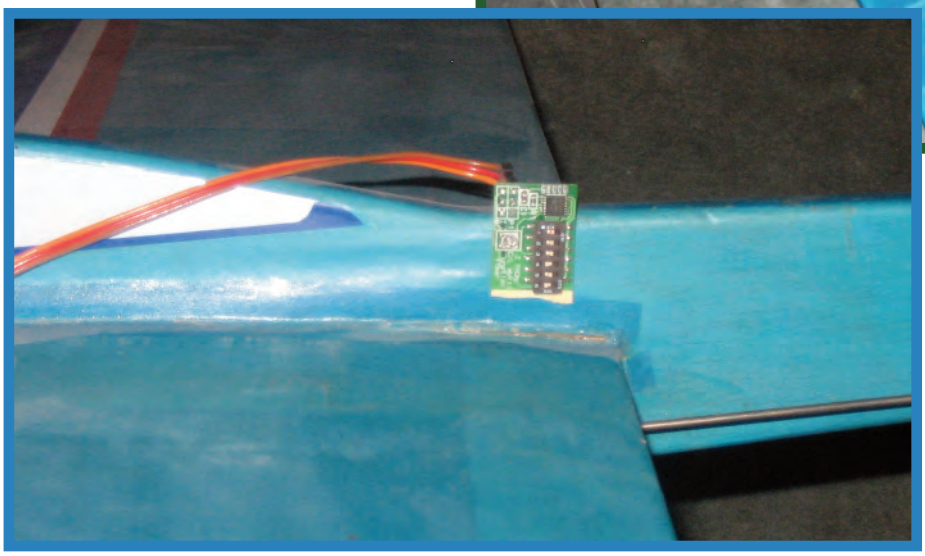
don't need. This Skyray set-up, along with the Super Clown set-up—described later in the text—are direct applications for Classic or Old Time profile type planes.

The most important part of any of these arrangements is the charger, and chargers can be expensive in more ways than one. Here is some unwanted advice, wrapped around logic, and based on negative experiences. My "*opinion*" is to buy the best DC charger that you can afford, and forget about those AC or AC-DC ones. That way most of your charging should take place outside, or at least outside of your house. I'm sure that there are a lot of people out there (especially in the colder climates) that use the AC ones safely every day. However, the Lipos have a potential to overheat from charging and can vent with flames (VWF from here on) in rare cases. *(This is an accurate characterization of what is happening; there is not an explosion. The batteries in rare cases will "vent with flames" in much the same manner that the Hindenburg vented with flames. —Ed.)* Whereas there are already hundreds of people out there that have been killed with *unloaded* guns (or so they thought), charging of Lipos should be treated with just as much caution as handling a weapon, and should never ever be done unsupervised (like; you plug it in, and go watch the game). Always watch them, always check them, and always feel them for warmth. If you walk away while charging them inside, AC or even DC from your car in the garage, you are asking for trouble. The problem is that every time you do it without a problem, complacency sets in and you start to assume there will never be problems because there have never been problems before. Remember, NASA didn't have any real problems with those foam chunks falling off the Space Shuttle for years, did they? You have to assume that if it can happen (and it has) it will happen, especially in the face of real evidence. Don't get paranoid about it, just be cautious.

The guys at the local RC glider club have a set of cinder blocks that they use to contain any fires or explosions while charging from the DC multi-charger they own. While visiting them on a "Control Line Diplomatic Mission," I observed a mishap in-person. A battery being charged was checked before charge, per the club rules. The charger (a high quality one) was set for the correct rate of charge. The charger had a failsafe on it that would not allow for charging unless everything was correct for charging that particular battery. The person doing the charge checked the battery frequently, which is probably what saved it from a VWF episode. While checking, he asked the Chief Test Pilot (whom I was speaking with) if Lipos should be puffing up like this. Before you could say lickety-split, the battery was off charge, wires removed, and everyone backed away from the cinder block in case of a VWF episode. That battery was puffed up to twice its depth, and 30 minutes later, it was barely cool enough to touch. I also have a very

close relative whose kitchen was smoked and burned from an unattended Lipo that caught fire while being charged in the plane. I had a modeling acquaintance that died in a house fire that could have been related to charging Lipos. I don't think the investigation is complete yet, but the Lipos are on the list of probable causes since the fire started in his shop area (he was not a smoker). Be careful, be cautious, be aware, and most likely you will be alive.

Nick Lemak, our Club Vice President and one of those NASA guys that helped us step on the moon, has been doing



Above: Here are all the works (minus battery) in-place and rigged for flight. This plane was flown with a normal fuel engine then it was converted to electric. The battery mounts on the right side of the nose where the fuel tank used to be.

Left: The Zigras Z-Tron Timer has 6 dip switches that can be selected for time and function according to a matrix that comes with it. The silver square is the RPM setting potentiometer.

independent research on electrics for around 5 years now. He has a series of planes that he has been flying and testing. They have operated increasingly better from his ongoing research. Currently he is flying an RSM Skylark that was built for electric; it was not converted from glow. You can judge for yourself if this set up will fit your plane from the specifications that come with the Skylark. Ed Southwick was a friend of ours, and I get this mental picture of Ed just grinning away whenever Nick's Skylark whizzes by. I think that Ed would have really enjoyed being part of the electric revolution. From a conversation with Nick, where I was heard to say, "Now what does that mean in plain English?" several times, here is the real skinny on what he has packed into the nose of his Skylark. The motor is a KMS Quantum 2826/05 Brushless, the controller is a Phoenix-45, the timer is a Kaz Minato FMA, and the batteries range from 14.8-volt 3300 to 4500 mAh packs.

LeRoy Black, another friend and local club member, has for a number of years been one of RSM's test builders and test pilots. Eric Rule (RSM) has come up with a pretty bulletproof package set-up of electric conversions for his line of Stunt planes. LeRoy had no knowledge of the electrics when he was asked to build and test build and fly Eric's Dick Mathis-designed Chizler. LeRoy set about building the Chizler, installing, testing, and flying equipment in it, and increased his knowledge and experience to where he and that plane are pretty dog-gone competitive. LeRoy will be the first to tell you that although he can identify the items in the nose of his plane, he just installed them by the provided directions and can't tell you how they work together to make the plane fly. He just charges and changes batteries, and very quietly completes one impressive flight after another. Items available independently from RSM are:

- Hacker A30-10XL "Outrunner" Style Brushless Motor, Including Prop Adapter, Front, Back or Front & Back Mounting Options With Screws
- Hacker X55 Pro Speed 50 Amp Controller With Automatic Timing, Lipo Voltage Cut Off, Selectable Acceleration, Motor Direction Adjustment, Heli Governor Mode, Low Voltage Cut Off Brake On or Off, and Soft Start Adjustable Timing
- Hubin FM8-A (RSM) Soft Start/Soft Stop Timer With Simple RPM and Time Adjustments (Pre Set for 9100 RPM, Flight Timed for 6 Min., 20 Sec.)
- *Or* a Z-Tron V.3 Timer System With Retract Option
- Thunder Power 4-Cell 3850 mAh Battery or 3300 (Now Available)
- Thunder Power TP6-10C Charger. Input Power: 11-16V DC 10 Amp at Maximum Charge Rate, Memory for Each Battery Type, Charge Battery Type: Lipo/NiMH/NiCd/Pb/A123, Charge Voltage and Cells: Lipo Battery: 1-6 Cells CC to CV Change Voltage: 4.1BV/Cell, Full Charge Voltage 4.2 V/Cell NiMh, NiCd Battery: 1-14 Cells, Pb (SLA) Battery: 6V/12V/24V, A123 Battery: 1-6 Cells

• Hacker USB Interface Programmer for Windows
• APC 12-6 Electric Prop

The complete RSM package contains:

• Motor, Timer, Speed Controller, Battery, and Charger
• It Is a Complete System Fully Programmed With 1 Battery & Choice of Timers, Motor & Controller Are Hard Wired, Controller & Timer/Sequencer Fully Programmed: Soft Start, 9100 Constant RPM, Total Flight Time of 6 Min, 20 Sec., End Flight Alert 10 Seconds Before End of Flight
• Fully "Plug & Play" Just Flip the Switch and Fly

Brodak is another source for electric stuff, and has had their ARF Super Clown with electric set-up available for a few years now. You can get a ready to go setup by purchasing the items separately. The good part is that all the testing has been done by Brodak and the parts work together very well. You could say that all the items together are a replacement package for a .35, but to the best of my knowledge Brodak does not offer it as a package setup. What they do offer as a package is the Enterprise E Electronics Package, but it comes without a charger.

The Super Clown items are as follows:

• ARF Super Clown (in Four Colors)
• Brushless Motor With Adapter
• Charger (DC)
• Smart Balancer
• Controller-Timer-Switch
• APC Electric 8x4 Prop
• Lipo Battery (4000)

The Enterprise E Electronics Package contains:

• Atlas AM2909/20 Brushless Outrunner Motor
• Jeti ECO25, 25A Controller
• 3 Cell 2000 mAh 11.1 Volt Thunder Power 2000 Lipo Battery
• White Plastic 2-Inch Diameter Spinner

I had originally done some research on the electric Super Clown setup, as the local Young Marine unit was going to use the electric Super Clown as its plane for team racing, and had asked me and our club to help them. People and politics change, and we never got to the building or flying stage, but it would have been fun. I had a Super Clown back in the day with an O&R .23. You could say it was electric, at least it had batteries, but it ran on white gas and oil mix.

Electric is a real change to the way you fly, not only from the lack of clean-up (a real plus in my book) but from really, really quiet Stunt flying. How quiet? Well, on one flight LeRoy asked me from the center of the circle to get his lap time, and later in the flight I asked him to flip it over so I could get the inverted time as well. Ok, you can do this with hand signals on glow powered planes, but not in a slightly elevated normal voice. On at least one occasion local electric pilots have been known to overhear sideline critiques and comments from folks observing the flights, and unexpectedly answering back from the center of the circle. Geeezz, remember when you could safely talk about the flight while they were flying? Now we will need a real "Cone of Silence."

Let's take a minute to look at the props being used for these systems. APC sets the standard, and the Skyray uses an APC 10x5. The Chizler uses an APC 12x6 Electric or a 12x6 Electric Pusher, which requires a little time out to talk about Standard/Tractor/Counter-clockwise (Anti-Clockwise) props and Reverse/Pusher/Clockwise props. In testing the Chizler LeRoy had initially mounted the Hacker motor with the "X" mount against the reinforced spinner plywood nose ring. This is not a standard mounting like the normal firewall mount is, and was attempted as a result of good logic. This is the beauty of actually testing theories that are logically sound, and turn out to be practical disasters. Mounted against the nose ring, the torque and stress on the "X" mount was beyond the stress and torque that would be translated into a firewall. So, the mount was changed to a standard multi-ply plywood firewall mount which is working just fine. The problem is when you change from nose ring to firewall mount, the direction of rotation changes because now you are using the opposite end of the motor to mount the prop. Let that sink in for a second while I tell you that LeRoy uses a Stooge to test-fly at the "Top Secret" RSM flight facility. OK, now you have the picture, when the motor blipped to indicate it was ready for flight LeRoy did not notice that it was rotating clockwise and started the "Soft Start" procedure while he walked out to the flying handle. If you listen very carefully you can hear the theme music from the Three Stooges. Chizlers don't fly as well backwards (tail-first) as they do forwards. Despite the best efforts of all the gods of comedy, LeRoy saved the Chizler from eminent destruction. To solve the rotation problem he mounted an APC 12x6 Pusher Prop and found that it provided better pull and directional stability from the change in direction of the prop and the resulting change in torque. *(All he really had to do was switch any two wires going from the speed control to the motor. This reverses the rotation of the motor. He inadvertently learned, however, of the amazing advantages of the reverse rotation prop! —Ed.)* That is how we found out that the pusher prop can be used as successfully for Stunt as the common tractor prop. Nick uses an APC 12x6 pusher on his Skylark as well. The Brodak electric Super Clown recommends an APC 8x4 electric prop, and although the on-line catalog shows a 3-Blade Master Airscrew 5x3 electric available, my guess is it is not for the electric Super Clown.

Just like the battery and charger information, prop recommendations are plentiful on the internet. You may want to pay more attention to the props in-use for Control Line from articles by Bob Hunt, Mike Palko, Randy Smith, Rudy Taube, and others, but the prop recommendations that are available do give suggested RPM for a given weight of aircraft. Remember, Control Line planes need more power than standard RC planes of the same size *(Mainly because of the line drag present in CL. —Ed.)*, so the recommendations for RC 3-D might be closer to the mark.

So, what is the breakdown cash-wise between the traditional glow powered Stunt ship, and the electric powered ship? Well, first it is only fair to mention there is a bit of a weight penalty because the electric stuff "all-up" weighs more than fuel power, and your glow power plane is going to gradually lose between 4 to 8 ounces on every flight from burnt fuel. *(Actually my Genesis Extreme conversion resulted in a model that was 2 ounces lighter at launch than it was with the glow setup on board! —Ed.)* However, there is no need to fuel proof an electric plane and it will never gain weight from fuel residue soakage. So there is a potential offset. LeRoy's Chizler came

out to 54 ounces and does not suffer in any maneuver because of it. At 59 ounces Nick's Skylark does not suffer either, and in-fact, Nick is putting together better patterns now than he has in years. When you consider that Nick was an "Expert" flier before, that is saying something …

Let's say that you have two examples of the same airplane; one for fuel and one for electric. The power-train for your glow powered plane will cost you around $200.00 for a good one. Let's not factor in the extra paint, painting equipment, etc. to fuel proof, because you may still want to use it on your electric. The cost of cleaner and paper towels to clean up the mess from fuel planes is not much either, so it stays out of the equation as well. The power train on the electric will cost around $300.00 (depending on the charger and battery you choose). If you fly conservatively 10 flights a month, you will burn let's say 5 ounces of fuel per flight, 50 ounces per month or 600 ounces per year or 5 gallons of fuel per year (rounding up with spillage). That will figure to $100.00 per year for fuel at $20.00 per gallon. Discounting the cost of the planes, because they are the same and cancel each other out, the cost to fly the fuel plane is roughly $2.50 per flight for the first year and assuming that the other stuff is already paid for that first year, 84 cents per flight the next year, and every year there after. Ok, the cost for the electric is $2.50 per flight for the first year and $0.00 per flight every year thereafter, assuming it will cost you nothing to charge your battery from your car. Do the math, then subtract the mess and cleaning, and you have slightly better than a wash. The investment is more up front for electric, and is about the same or slightly less than a fuel plane in the long run. You can get a pretty good Stunt engine for less if you shop, and the same is true for electric stuff; again a wash.

The Skyray and Super Clown set ups are good for .35 size planes in the 45 to 55 ounce weight range and the RSM and Skylark setups are good for .40 size planes in the 55 to 60 ounce range. Given the two most annoying drawbacks to Stunt are the noise (not to us; we look at it as though it were music) and the clean-up, electric may be worth a try. Here in this article you have four ways to attempt it. Happy Trails. SN

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Super Tigre G21/.40&.46 Rework includes: 1. Re-hone cylinder, 2. Install a hardened "Bowman" piston ring, 3. Upgrade bearings, 4.Install a conventional type Stunt venturi, 5. Make several internal Stunt mods. These motors are very powerful, and have lots of torque, and an excellent 2-4 break! If you supply the motor it is $85. If I supply motor = $225

O.S. .35-S Rework includes: 1. Deburr the factory port burrs, with a rubber tip Dremel tool, 2. Then I send the piston out to be heat-treated, (which also expands it slightly), 3. Then I hand-lap the piston to the cylinder using a very mild lapping compound, 4. I install a custom made stunt venturi, 5. I install Allen Screws. These motors will 1-flip start, every time! If you supply a NEW motor the cost is $75 (I CANNOT rework a used .35-S) If I supply the motor = $125

McCoy .40 Red Head Rework includes: The weak link in the Mc.40s was the soft, "sintered" iron piston, which lost compression quickly, and would not allow use of a muffler. 1. I send the piston out for heat-treating (which also expands it slightly), 2. Then I hand-lap the piston to the cylinder using a very mild lapping compound, 3. I install a custom made stunt venturi, 4. I repaint the red head, 5. I install allen screws. These McLayed .40s have the strongest 2-4 break of any motor I have ever flown. If you supply a NEW motor the cost is $70. If I supply the motor = $115

Note: All engines include Break-In instructions, and Fuel and Prop recommendations.

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It's in the Details

By Matthew Neumann

Here is a picture of the author's completed plane. Read on to see how he does it!

Masking: To some it is a complete joy. It's like watching a big-budget feel-good movie. After many hours of working on the airframe, they can finally see what their finished project is actually going to look like. Not just what they think it will look like in their mind's eye.

To others, however, it is like being in a B-grade horror movie. They have nightmares about paint bleed through, overspray, paint peel ups, and a host of other problems that make them wonder why they are doing this. This column is aimed at helping those who stay awake at nights because they are afraid of the nightmares from masking some intricate or even simple patterns.

Here is a picture of several tapes on the market ranging from the cheap dime store variety to the more expensive automotive varieties. Some are good at straight lines, while others are good around curves.

First things first. The simplest form of masking is … masking tape. Duh! Masking tape is masking tape, you say. *Wrong*! There are many different types of masking tape designed for different purposes.

Let's start off with the cheap variety that you get in your local Wal-Mart or dollar store. The *pro* aspect of this type of tape is that it is cheap and readily available. However, its *cons* are its sticking ability and that it is less likely to leave a clean edge, which makes it less desirable for many applications. However, the one place I like to use it, and where it excels above all the other types of tapes, is when I need to tape paper or aluminum foil to my model to avoid overspray. I put half the width of the sticky side of the tape on the paper/foil and the other half on the tape that I am using to actually mask off the model. By doing this, I do not care if the edge is not clean or the tape too sticky. The tape underneath won't mind. Why use the more expensive tape when you don't need to?

If you still want to use the cheaper tape to mask, you still can. Sometimes you must de-tack it first. You do this by taking a piece of tape, taping it to your shirt first and then peeling it back off. What happens is some of the lint from your shirt is now stuck to the tape, making it less tacky and less likely to pull up paint. However, this can have a disadvantage because the fuzzy stuff that comes off of your shirt can hang over the edge of the tape, causing you not to have a sharp edge. Another word of warning: Get this

tape off of the model as soon as you can. The longer you leave it on, the more likely it is to really stick, causing a mess. For these reasons I mostly use the cheap stuff to hold on the paper used to keep overspray off of the model.

For actual separation of colors, 3M makes an excellent line of tapes. You should be able to get it at your local automotive paint supply store. This tape is more expensive, but the extra expense is well worth it because of all the problems you can avoid. This is just another case of, "You get what you pay for."

The first variety I would like to mention is the green colored tape. I think the number on it is 6334. The tape I get is the standard 3/4 inch wide tape that has a texture to it similar to the cheap tape but is of a much better quality. It is thin, which is important because you do not have a thick edge that tends to build up paint, plus it does not have a large amount of tack so it comes up easily greatly reducing the chances of it peeling up the underlying paint. I will also note that the tack of this tape does not cause a problem if left on the paint for a longer period of time. You can leave it on the plane for several weeks I am told with no ill effect. It also produces a very clean edge and can form to curves such as the top of a fuselage well. This tape is wonderful when masking off areas that need to have a straight line. The disadvantage is that it will not form easily around curves.

Another tape that is good for straight edges is the tan colored tape. This tape is a stiff vinyl variety. It is smooth and comes in a variety of widths, which is very helpful when doing striping. You can put several widths next to each other and then peel one off at a time, paint that color, replace the strip, and repeat the process for the next strip. You then get even stripes of the correct width. The disadvantage of this tape is that it is still not good for going around curves.

This is where the blue vinyl tape comes in. This tape also comes in a variety of widths and is quite flexible, especially the 1/8-inch width variety. This tape can turn on a

Above: The green tape is used to outline major areas for masking. In the case of my latest plane, I used it to outline the three major colors of my camouflage scheme: the two browns and the light blue.

Right: In this picture you can see I am in the middle of "tracing" my pattern for the wing insignia.

Below: In this picture you can see the completed outline for the wing insignias.

I then painted the inside black for the insignia and then used the tan and green tape of different widths for masking off the black part before painting the white. I know that normally you want to paint a darker color over a lighter color but the insignias were easier to mask off this way.

dime but, like anything else, it has its limits. So don't expect it to be able to turn on a pin head. "Dime yes, pin head no." The disadvantage of this tape is the opposite of the tan or green tape; it is extremely difficult to produce a straight line using it! No matter how hard you try, it will have some curve to it over any length straight run. So, for straight lines, use either the green or tan tapes; for curves, use the blue.

Now, let's look at some examples of what to use where. I'll use my latest Stuka for this.

The first, and what should be the most obvious, is the camouflage color of the plane. I painted the bottom of the plane the light blue first and then outlined where I wanted the blue to end and the browns to begin in green tape. I then used the cheap tape to hold on the paper to prevent overspray. I then painted the general areas that I wanted to be the light tan color. I did not worry about painting the whole plane light tan to save on weight. After the tan had dried I then outlined the light tan areas that I wanted to stay light tan in green tape and again used the cheap tape to hold the tape in the areas that I wanted to stay light tan. The darker brown was then painted in the areas left exposed. After the paint was dry, the tape was removed, revealing the basic camouflage scheme of the plane.

I then used the green tape to outline the insignias of the plane. I first cut out a full size paper pattern to use as a guide when masking. I folded over some tape on the back of the pattern to hold it in place and then "traced" the outline in green tape. The pattern speeds the process up considerably because you do not have to keep measuring to make sure the shape is correct because you already did that in the paper pattern.

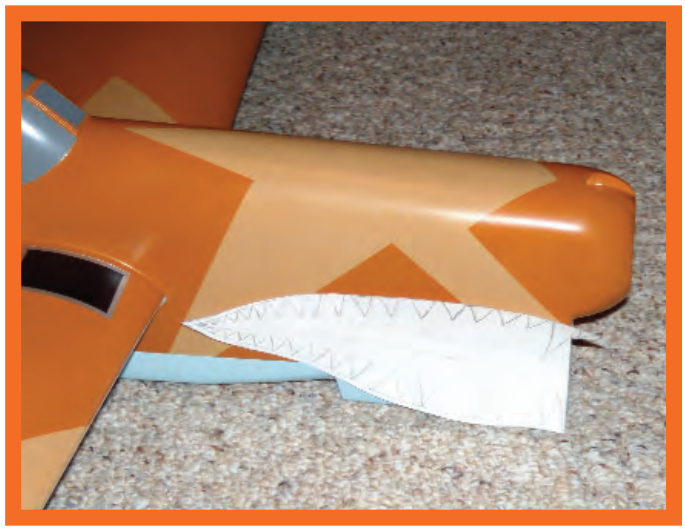
Speaking of paper patterns, let me just mention that these can also be used as a tool to help in masking. You can make several sizes or shapes of what you want and then place them on your model in several locations to see how they look. If you don't like the size or location, it is easy to change. Do it now when it is easy to change rather than later when it is painted on the plane and much more difficult to change.

The wing walks were very easy. I just used the green tape and masked off rectangles. The silver portion is an example of the striping that I mentioned earlier. I masked off the outside of the silver first in green tape and then painted the silver border. I then took some 1/8-inch tan tape and placed it next to the green tape edge to give a perfect 1/8-inch border. The black inside was then painted and the tape removed after the paint was dry.

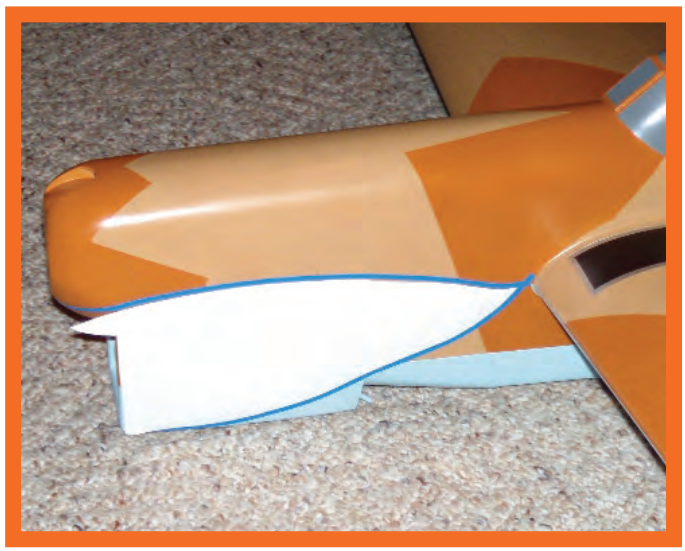
The unit markings I had cut out of paper just like the insignias and traced around them with the green tape. Why did I use those particular letters and numbers? Simple, they were all straight lines and were easy to mask!

Jaws …

OK, now what about curved areas such as the shark's mouth? This was not as difficult as one might think; maybe a little time consuming, yes, but not all that difficult. The first thing I did was cut out a paper template of the proper size and then doubled back some tape and put it on the back of the template. I then positioned the template on the side of the nose where I wanted it. By now I'm probably sounding like a broken record. I then traced around the template with the blue 1/8-inch fine-line tape. The green tape will not work here because of the curves of the mouth. We need something more flexible and this is where the blue tape excels.



Here is a shot of the template for the shark's mouth in place.



Here is a shot of the nose of the plane with the template traced with tape.

And what she looks like with just the tape. Note how the tape followed the curve of the mouth. You can't do that with the wider green tape.

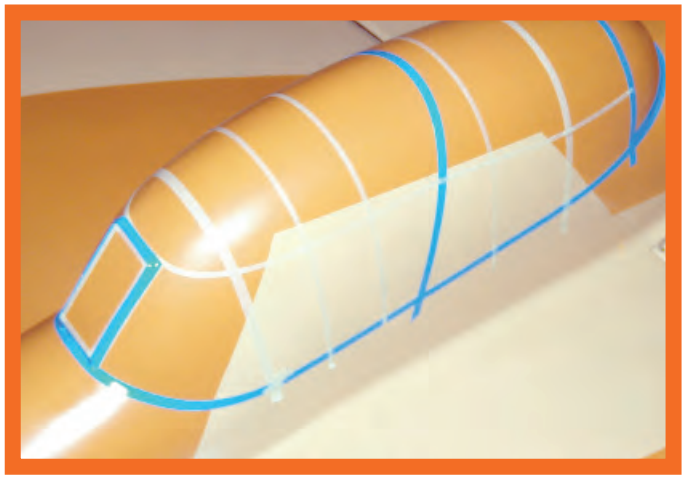
The nose was then masked off with paper and the cheap tape and the border was painted. The border is 1/8-inch thick, so what I did was again use the 1/8-inch fine line blue tape and traced the inner edge of the outline tape leaving the paper in place. This gave me a perfect 1/8-inch border around the mouth. Now, one thing I would like to mention: No matter how good you are at putting the tape next to each other, there will be small gaps here and there that need to be masked off. Put another layer of tape over the joint to seal these gaps. Otherwise you will have some overspray from your next color that will look like someone is writing Morse code on your paint scheme.

After I masked off the border, I painted the interior of the mouth white for the teeth. What I did here was take my outline that I drew earlier and draw in the teeth. I then cut out each tooth from the paper template and then positioned it on a piece of green tape stuck to a cutting board. I then traced around each tooth and cut it out with a sharp knife of choice, leaving the root of the tooth a bit longer. I did this so I would have some overlap onto the piece of tape that was masking my border. I then peeled each tooth from the board and placed it in position one at a time. Yes this was a little time consuming and a bit tedious but it was not at all hard. Remember, I *did not* say at the beginning of this article that I was going to show you how to make masking quick; I said that this is how I did an intricate painting pattern without the nightmares.

After the teeth were put in place, I painted the red tongue and then masked it off, masking over the lower teeth masks where needed. The remainder was then painted black. The eye was done in a similar fashion by tracing around a template of the eye.

Now for the canopy

To apply the canopy details I first painted the camouflage scheme like there was no glass in the canopy area, see picture 2 above. I then took the blue fine line tape and masked off the outer most border of the canopy. I used this tape because it curves around the ends of the canopy where the tan tape will not. I then used the tan tape to mark out the framework. Here the tan tape is easier because I wanted straight lines. The exception being the two places you see in the next photo. The reason here was because of the compound curves that the tape was going over. The canopy is done with two different sizes of tapes. This gives a little bit of variety to the canopy. I then mask off for overspray and then painted the "glass." When the tape comes off, I have a perfectly even width canopy frame. The biggest thing here is to make sure when you eyeball the frames, make sure they are even distances apart. If not, your canopy will look "funny," and in a not so "ha-ha" way either …



Here is a picture of the canopy masked off. Note the blue tape along the bottom and along the portion of the framework that requires compound curves. The rest of the tape is the tan tape that will not curve very easily.

The intricate stuff

Ok, the above describes the way I do the normal markings and paint schemes. What about the really intricate stuff, like, say, the small tank that I painted on the side of my plane's nose? Easy; either make a decal or have a mask cut out with a laser cutter. My tank is a laser cut mask. These things are really neat. The laser cutter cuts out the mask in a material called Frisket paper or equivalent. What is Frisket paper? It is a low-tack contact paper. The laser cuts out the design in the paper.

Here you can see the laser cut stencil in place ready for the overspray paper to be applied.

You then cut out around the design cutting a reasonable distance around the outline. You then peel the backing off and stick it where you want the design to go. Mask off for overspray and paint the area. When dry, your special design will be on your plane. The laser cutter can also cut out lettering for your plane such as all the German stencils that I have on my current plane.

Another way to do this is with a decal which I have on my rudder. This process is for a future article however. Stay tuned for this one.

Here the tank has been painted and the mask ready to be removed.

Here is the finished product. You can see the tank along with an arrow and some triangles that were all applied in the same manner.

Ok, I "cheated" on this one because this design is a decal. I will go over this process in a later article since it does not have to do with masking. Hey, I got to keep your appetite wet for more somehow.

You say you don't have access to a laser cutter or Frisket paper? Now what? Well, here is something I have heard about but have not tried myself but should work well. I first read this in one of Jimmy Casale's Spectrum articles. First cut the design out of paper. Now take some liquid rubber cement and cover an area larger than what you want to paint. Place the mask in the correct position and press down sticking it into position. Now take your finger and gently rub in a small circular pattern the exposed rubber cement from the center of the area to be painted towards the edge. Do not go from the edge toward the middle of the area. If you go from the center to the edge, the rubber cement will get pushed under the paper a bit and get cut off cleanly. This will help considerably in producing a clean edge. If you go from the paper toward the center, you may accidentally pull some of the rubber cement out from under the paper. This will cause some bleed under which is not really a pretty sight.

Now, a word of caution: I personally have not tried this method. I have heard of other people doing this and having good results. Were I to try this, I would start with something small that needs to be painted first. This way if something goes wrong it will be in a small area that needs repainted, not in a large one. I am sharing this with you as an alternative to those who may not have access to or the desire to pay for the laser cut stencils. *(Fear not, Matt, this technique works fine, and I was the one who showed it to Jimmy Casale. But, I cannot take credit for it because Billy Simons showed it to me! I'm pretty sure someone else showed it to Billy. —Ed.)*

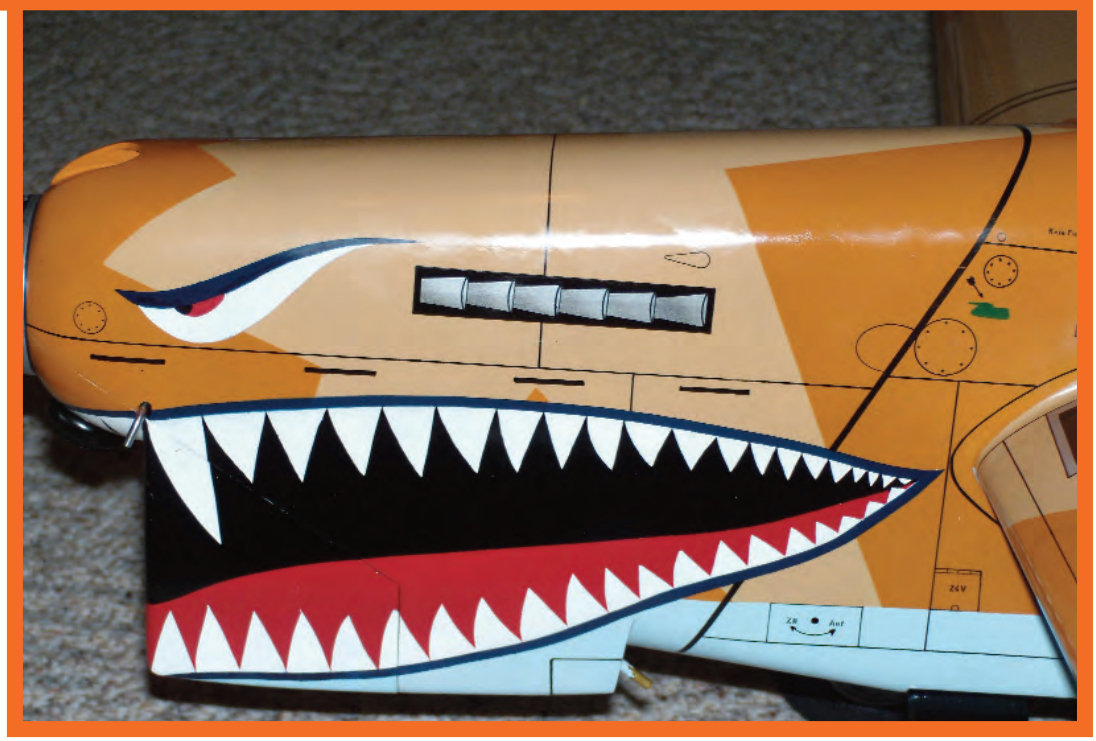
Many people ask me how I paint my exhaust stacks. This is, again, fairly easy. The first thing to do is to mask off a rectangle and paint it black. Use the green tape for the outline since this will again give you the straightest lines. I then take a piece of Frisket paper and cut out a series of trapezoids. I then position the Frisket over the black rectangle and then paint the area silver. The ends are then inked with a partial circle to give the illusion of being round.

Taping tricks

Now let's look at a trick or two to make putting down tape easier. Take a piece of tape that is longer than what you need. Grab one end of the tape with your thumb and pointer finger. Now place one end at the starting point of your line. Pull the tape tight with the other hand while pushing the end that you are staring with firmly down on the plane. Now carefully lower the end that is not stuck to the point where you want the line to end. When satisfied you are in the right position, push the free end down with your thumb to stick the other end in place. Now lightly rub the tape down from the center out with your fingers. Sight the tape line to insure that it is in position and is straight. If it looks wavy, and it is not supposed to be, you can loosen the area that is in the wrong position by carefully picking it up with a sharp knife. Move the tape to the correct position and lightly press down again. Don't say to yourself, "Ah, no one will notice if it is a little wavy." Fix it! Chances are someone

Left: Here is a picture of the completed masking and painting. What is missing is the ink lines, the decal for the rudder and the clear coats. This is to show you the many different possibilities that can be done with simple masking techniques. Apply these techniques to your particular paint scheme.

Below: Here is a shot of the exhaust stacks. You can see the trapezoid shape and the semi-circles at the ends. The semi-circles give the illusion of roundness or depth.



like me will come along and notice. Fix it right the first time and it will reward you for the life of the plane.

Here's another tip. Before painting, burnish down the edges of the tape. What this means is to gently rub along the edges of the tape using something semi-hard like a fingernail. The light pressure will work wonders. This burnishing ensures that the edges are down and the paint will not bleed under the tape. Where two pieces of tape overlap is a critical place to make sure things are secure. The top layer of tape will naturally want to lift right at the intersection. A little extra time here will save time later because you won't have to fix it. One thing you could also do after all the tape edges are burnished is spray a light coat of clear along the tape joints. This will seal the edges helping to get a crisp, clean edge without the paint bleeding under the tape. The clear will go under the tape first preventing the color from going under the tape. Once the top clear coats are applied to the plane, no one will ever notice.

Don't be a rip-off artist!

One last tip on taking tape off: Do not just rip it off. Take an end and gently peel it back on itself at as close to a 180° angle as you can. Try to avoid as much as possible pulling straight up away from the painted surface. Pulling straight up will give you the greatest chance of pulling the paint up with the tape. Sometimes, however, the paint underneath still wants to pull up from a lack of adhesion. When the paint starts to pull up, *stop pulling*! Take a sharp 11 blade and carefully pry the paint away from the tape. Once the tape is pried away, hold the knife blade at the point where the tape is still stuck to the plane and continue pulling straight back upon the tape. You are now using the knife blade to hold the paint down as you continue to pull back. This will minimize the area that needs fixing later on. And yes, *everyone* will get a pull-up now and again. You are not alone. This is a method on how to minimize the problem.

Final thoughts

Masking is not that hard, as is the case with most other things in building a plane. Just have a little bit of patience and you will be fine. Where most people get into trouble is when they rush things. Remember, this is a hobby and it is supposed to be fun. Start out small at first by masking simple schemes. Then with each new plane, make the scheme a little bit more complex and soon you will have people shaking their heads in awe of your handiwork.

Above all, remember, it is all in the details! SN

Robin's View Productions

BOB HUNT'S LOST-FOAM WING BUILDING SYSTEM

In 1968 Bob Hunt began experimenting with foam wing cutting, eventually becoming one of the world's most acknowledged and accomplished experts at the art. He liked the inherent and easy-to-achieve accuracy that a properly cut and covered foam wing virtually assures.

Bob has developed a wing building system that takes advantage of the accuracy of the foam cradle pieces, which are just as accurate negative airfoil shapes as the foam cores are positive airfoil shapes. He has devised a system in which the foam wing blanks are marked for desired rib positions for a built-up wing, prior to being cut into a wing shape.

Once the core is cut, the rib positions are marked accurately onto it and labeled, and they are also marked and labeled in the lower cradle section. The core is then cut into extremely accurate rib stations to be used as templates for generating equally accurate balsa ribs. An absolutely perfect built-up representation of the original foam core shape can then be assembled in the lower cradle half, which is at this point a form-fitting building fixture.

Bob first tried this process in 1993, and the very first wing built in the system was absolutely accurate in every respect. That wing was built for Bob's Tucker Special, which went on to win the Vintage Stunt Championships. Its wing was lightweight, strong, and true!

time, Bob has been constantly developing and improving his Lost-Foam Wing Building System, incorporating many unique innovations and ever more accuracy-insuring techniques. Its success is evident by the large number of top aerobatics champions who have chosen Lost-Foam as their preferred wing building method. Included on that list are Bill Werwage, the 2004 World Champion, and David Fitzgerald, the current World Champion.

The Lost-Foam Wing Building System has many advantages over any other type of built-up wing fixture system. The ribs that are generated from the cut-up foam core templates are accurate to within a few thousandths of an inch, and they fit perfectly into the lower foam fixture to yield a perfectly shaped wing. No other system keys on and trues the outside shape of the wing as it is being built! Foam leading edge molds—which are exact replicas of the front of the wing shape—are used to generate hyper-accurate leading edge shells that have a perfectly shaped leading edge radius. Improperly shaped leading edges are a major cause of poor model performance. The Lost-Foam system solves that problem completely!

Lost-Foam Wing Building Systems are available for any straight taper or constant chord wing, and either straight or Warren Truss rib schemes can be ordered.

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Bob Hunt's Lost-Foam Wing Building System DVD set (2 DVDs totaling 207 minutes) is available from Robin's View Productions.

The 2-DVD set is list priced at $39.95, but is available for a limited time to PAMPA members for $24.95, plus $5.00 postage and handling (US Only). Visa and MasterCard are accepted.

Start building better, lighter, stronger, and much more accurate wings today! This system and these techniques are, according to Bob, his most significant modeling contribution to date.

Bob also offers a custom building service for Lost-Foam wings. Please contact Bob at RVP for pricing and delivery times and terms. Bob has built more than 250 Lost-Foam wings to date!

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Remember our motto: RELENTLESS INNOVATION!

The Stiletto Chronicles

Part III

By Les McDonald

Unknowingly about to win the 1976 World Championship the Stiletto 660 sits patiently in the pits awaiting the final round in Holland. Photo: Claus Maikis collection.

Nineteen Seventy-Six was starting to look like a very busy year; stupid busy. After the Team Trials that past September I had planned on building two new Stilettos and trying, once again, to win the Nats. I wanted also to do normal young married guy things, for a short time anyway. Cookouts with friends, movies, stuff like that, at least for Nancy's sake.

After Doc Jackson's visit everything changed and stuff started coming at me in rapid succession. There would be no young married guy things in the foreseeable future.

During the process of drawing up the #9 and #10 Stilettos I received a phone call from Dick Mathis. I didn't really know him personally but I was aware of his Stunt flying success with the Chizler and his writings about the mental part of competing in Precision Aerobatics. He also had a book published about Control Line to his credit so when he told me of his desire to kit the Stiletto 35 that was featured in *Model Airplane News* I didn't hesitate to say, "That would be great." We spoke several times, mostly about wood sizes and the business part. He wanted to produce a kit exactly the same as the *MAN* plans, with no modifications or compromises. A few parts would need to be spliced and I suggested a bit longer landing gear but in the end it would be a duplicate of the one I flew. There hadn't been a new Stunt kit produced in years except from Sig so this was somewhat of a breakthrough. I wished him well and proceeded on with my preparations for the upcoming year.

I had a pretty good idea of what I wanted to improve on the new Stilettos. Working from my experience from #8 (the 700),

She explained the baby is due in August, the World Championships and Nats are done by July.

I started drawing on the brown wrapping paper. The 700 was roll sensitive so #9 and #10 would be provided with a bit more airfoil at the tips, to be able to carry more tip weight if needed. The fuselages would be a little less deep and the cowls would be designed for good airflow, easy access, and service. The flaps would be flat, no airfoil, for sensitivity at neutral. The wing would be just a tad thicker with a small decrease in the leading edge radius. This time the stab and elevators would be from sheet, for building simplicity. I just wanted two very basic, easy to trim, good flying, nice looking Stunt ships. As it turned out I was one for two; more on this later.

Names and numbers

The first four or five Stilettos had designation numbers assigned to them. For example; Stiletto #6 would have the marking 74A, being the first completed in 1974; Stiletto #5 would be marked 72C, the third Stiletto built in 1972, and so on. That ended with the 700 and never continued. The two new Stilettos were simply called the 660 and 710—roughly the estimated wing areas.

I never gave any of my planes a personal name. The last Stiletto I built had "Diane" in script on the cowl, put there to please my 6-year-old daughter. The same plane had "Orange Blossom Special," in small print, on the wing. I suppose to pay some homage to the store that unwittingly supplied me with so many propellers over the years. Now, in my later years, I name everything. For example; My Tundra truck is "Chester," my Honda Interceptor motorcycle is "Virgil," my wife's Accord is "Riley," my BMW Supermotard is "Gomer." This goes much deeper. My air compressor is "Dale." I have a Thermos bottle called "Edward" and even a screwdriver named "Denise."

None of these items can come close to the adventures I shared with my Stilettos and yet I treated them as "beasts of burden." I suppose they represented many hours of frustration and aggravation.

Back to the task at hand.

A young married guy thing

Building two Stunt ships at the same time was a major chore. Things like cutting out the wood parts, bending landing gear wires, and fabricating the control pieces was easy. Sanding filler coat, masking paint lines, stuff like that, just went on and on.

Right in the middle of all this I was confronted with the real shocker. "You're what?!" That was the only thing I could say after Nancy told me she was going to have a baby. It was obvious I had been participating in, at least, one young married guy thing. Nancy and Doctor Sal had already done the math but I was still not comfortable with the immediate future. Like I stated in the beginning of this piece, Nancy was a trooper. She explained the baby is due in August, the World Championships and Nats are done by July. She assured me it will be okay.

I knew when Werwage saw that tape I would be tossed from the club.

Since I had always considered my needs and wants above all else, I proceeded on with my preparations for the upcoming season.

I just wanna fly

By March I was really tiring of this "two planes at the same time" ordeal and cheated. The planes were painted, the blue and red trim had been applied, and I just needed to do the gold outlines. I thought about the masking tape, the newspaper, the airbrush, and the time that would be required to apply the outlines. To this day, when I see the 660 in the AMA Museum, I regret that I "went weak" and used striping tape for the gold. I knew when Werwage saw that tape I would be tossed from the club.

I still had to rub out and polish these things; it never ended. I built nice Stunt ships but never truly enjoyed it like most of the guys seem to. In retrospect I wasn't real fond of trimming and practicing, I just wanted to fly. I had not yet discovered winning and how it important it was going to be—in my mind anyway.

Finally the 660 and 710 were ready to go. I had three months to sort out my "competition presentation." Vince was around to help and Nancy was doing well. Remel would come down and coach after I had one of these things flying to some acceptable level.

By April the M&P Stiletto kits were on the hobby shop shelves and advertised by the mail order houses. There were some issues with the kit concerning the quality of the wood, the rib cutting, and an error on the plans, but it sold well and I really had no control over any of it. This was long before laser cutting and CAD plans. One of my park ranger buddies built and flew one and it seemed okay for him. A new improved version was coming in the future but that's for later in the story.

It was Spring of 1976, daylight savings was about to start; it was flying time. I followed the same schedule I had been using for the past several years.

. I would keep my Stiletto at work, in a glass showcase (a very smelly showcase) and then, after working nine or so hours, head back to my practice site and fly until dark.

Nancy and I were living in the Dadeland area of South Miami. My practice site was in North Miami, my Mother lived in Northeast Miami, and I worked in Central Miami, near the International Airport. I would get up at 5 in the morning, load up the plane, and drive 27 miles to the practice site. I always wanted to be in the air by 6:30, do a few flights, and then drive 7 miles to my Mom's house and get cleaned up so I could be at work before 9. I would keep my Stiletto at work, in a glass showcase (a very *smelly* showcase) and then, after working

Les displays the sleek profile of his Stiletto 660 on finals day. We know this photo was taken during the finals since Les only used the "Trick Shirt" on the last day of a competition. Photo: McDonald collection.

Remel Cooper made several 700-mile round trips to whip me into shape.

nine or so hours, head back to my practice site and fly until dark. That was 84 miles round trip every day five days a week. At night I would work on stuff to try the next day. Sundays were home days, with Nancy, unless of course some Stiletto problem needed immediate attention. Monday was my day off and it was always totally wasted by doing non-Stunt-related chores.

The big deal fly-off I had anticipated for the previous five months turned into a non-event. The 710 was a dog, perhaps a show dog, but it had a tail and fleas. I did work with it and gave it a chance, but it was eliminated from consideration within two weeks. It would not turn well and refused to fly level. The problem was so obvious someone should have slapped me in the head months before. The stab and elevator just did not have enough area. Stilettos historically have smallish tail surfaces and this one demonstrated what happens when you don't give some basic design parameters enough thought. At that time I felt it had been a waste of time and energy but I did use it as a test mule for a year or two and then eventually sold it to a collector from Spain.

The basic set up for the 660 was established quickly; I don't remember any big struggles. No added "widgets" or cutting, just the usual twists and blobs of clay. I tinkered with several 46s so I would have a back up and built a few fuel tanks. I made up a spare flying line set and prepared all the hardware for the upcoming European adventure.

By May the 660 was working well. It had a decent corner and stayed flat in both the insides and outsides. I wished it grooved a little better but I could hit the bottoms with consistency and line tension seemed adequate. Vince commented it looked really good in the air and expressed a desire to build one.

Remel Cooper made several 700-mile round trips to whip me into shape.

During one of Bob Gialdini's visits to my home in Miami, he talked to me at great length about the intersections in all three of the round eights and the importance of that one nanosecond that the model is perfectly vertical in the intersection of the Horizontal Figure Eight, perfectly horizontal in the intersection of the Vertical Figure Eight, and perfectly aligned with the wingover path at the exact apogee point of the Overhead Figure Eight, at the transition points.

Bob Gialdini had been selected to judge at the 1976 World Championships, so it was a no-brainer for Remel to help me get it right. I wanted to be sure Mr. Gialdini felt his words weren't wasted on an empty head.

A box, a passport, and 4 gallons of toxic fuel

By that time I had worked out an arrangement to be supplied with K&B 100 fuel in any quantity I needed. I was using the X2C lubricated variety since it ran longer and burned cleaner than the basic 100 with castor oil. X2C was an early generation synthetic and, through no one's fault but my own, would create a major problem right from the first engine run in

By 1976, I was hoping this "Hot Stuff" wouldn't just evaporate and allow all the glue joints to let go. I would actually have nightmares about this.

Holland. My good friend Don Pinckert, an RC boat racer and world record holder, warned me of the pitfalls of using all synthetic based fuel but I simply did not pay close attention to what he was telling me.

I had also become familiar with "Hot Stuff" instant adhesive and used it extensively in constructing the 660 and 710. I remember so well walking into someone's workshop in Jamaica in 1974 and seeing Jim Martin and Norm Page bending over a table. I heard Jim tell Norm, "A little puff of smoke will come up when it's dry." Surely I was being "punked," but in 10 minutes I was gleefully playing with the little blue, wax dipped bottle of glue and discovering for myself that not only did this glue work very well, it did indeed produce a puff of smoke as it cured. By 1976, I was hoping this "Hot Stuff" wouldn't just evaporate and allow all the glue joints to let go. I would actually have nightmares about this.

There was so much to do. Months before getting prepared to leave it seemed exotic and exciting, but once I was into it, it was just work.

A daytrip into downtown Miami to apply for a new passport, that's an adventure all to itself. A box in which to transport the Stiletto was another undertaking. Four gallons of fuel needed to be sent up North so it could be shipped by boat to Holland. Forms and releases were filled out. Clothes, tools, spares, and all the things needed for three weeks far from home were prepared.

The AMA took care of the round trip from New York to the contest site. They also handled the entry fees, which included food and lodging for the actual contest period—about five days. The only other financial help came from a "Practice Fund" allocated by the AMA and some money from PAMPA contributions. This totaled up to a bunch of money and was greatly appreciated but a big financial burden still fell on each team member. Three weeks on the road costs a lot.

I did notice that these modest contributions came from personal accounts and not the companies.

Once again, "I'm a Lucky Guy." Because of my position in the hobby industry I was able to convince many associates and vendors what a "wise investment" into our business relationship this would be. This "shakedown" didn't cover all the expenses but it really helped a young, not so normal hobby shop employee with a very pregnant wife at home. I did notice that these modest contributions came from personal accounts and not the companies.

Time to go

Nancy and I had two identical, "His and Hers," Butterscotch colored, Datsun 510 sedans. I installed a "roof rack" on "His," bolted my very substantial transport box to the rack, placed my Stiletto 660 in the back seat, and headed for Bill Simons' home in Northern New Jersey.

He would deliver me, with all my stuff, to JFK at the appropriate time to hook up with Doc Jackson and the rest of the team. It sounded simple enough.

This was to be about a 33-hour drive. Please be aware and remember that the Interstate system, in 1976, was yet to be complete.

I didn't dare turn the engine off during refueling stops and a roadside nap was out of the question.

Thankfully I had planned to spend a few days with Simons because with all the commuting between home, work, my practice site, and various contests "His" was not a low-mileage vehicle. Somewhere on Interstate 95, in Virginia, "His" burned a valve. Just pressing the accelerator kept the speed up until another valve "lost its edge." The old Datsun just couldn't top 50mph and I'm sure the box bolted to the roof didn't help the cause. I soon discovered "drafting" and started "tucking in" behind every 18 wheeler I could keep up with. I didn't dare turn the engine off during refueling stops and a roadside nap was out of the question. All of a sudden my obligation to the team loomed large. No matter what, I had to reach the Simons' house. I felt very alone out on that highway.

"Simo" had mailed directions to his house but, as the ailing, smoking Datsun approached New York City I missed an exit and found myself entering a tunnel. I am a child of the suburbs, intimidated by large cities, and now I was in the big one. Too tired to panic and yet smart enough not to ask for directions, I found my way out and, finally, into Northvale New Jersey. At 4 in the morning I pulled up into Simo's yard, shut off the engine, and fell asleep behind the wheel.

At daybreak Bill Simons tapped on my windshield and at that very moment he seemed like an Angel sent to rescue me and place me into the comforting, nurturing hands of Doctor Laird Jackson.

I entered the hallowed kitchen of the Simons residence, drank about five cups of coffee, and was smothered by the feeling of well being. I was now surrounded by people I truly admired and trusted.

I sat at that kitchen table and thought about all the Stunt fliers that had been right there, over the years, smoking

Here's the 1976 United States F2B team. Clockwise from back row left are Gene Schaffer (6th place), Bob Gieseke (3rd place), Les McDonald (1st place) and Bill Werwage (2nd place). Talk about domination! Photo: Laird Jackson collection.

cigarettes, drinking coffee, and discussing all the topics that seem so important to us. Bill and Tootie had children and it was easy to surmise many times there were just more, bigger kids in that kitchen. Tootie would complain what a bunch of slobs they were but you could tell she loved every moment *(I don't know, Les. I spent countless hours in that kitchen and downed hundreds of cups of coffee there and never really felt overwhelming love from Tootie. She was a trooper though ... — Ed.)*

I stayed with them for two days. The first morning was dedicated to delivering "His" to the local Datsun dealer for an engine rebuild and arranging for Nancy to send funds—that we didn't have—to cover the cost of the repairs. I didn't care. I had made it this far and would deal with getting home later in the month.

That evening Bill Simons and I visited the local flying field. Gene Schaffer was there but he too was packed and ready for the trip to Holland so he wasn't flying, just hanging out. I had always envied these guys. So many good Stunt fliers living in close proximity to each other, tossing around ideas in "Simo's" kitchen with that "Your hobby is your pal" mentality. In reality there were some ego issues. It seemed as though they were constantly trying to establish some sort of pecking order and contest success was not a factor.

On this particular evening Bill and Gene were not speaking to each other. I had the feeling the New York/New Jersey fliers were some sort of dysfunctional family, living out bumpy relationships. You just knew that if an "outsider" spoke up they would all band together and eliminate the "intruder." I was smart enough to realize that I was an "outsider" so I kept my mouth shut.

July 4, 1976, was America's big Bicentennial weekend. With the 660 packed into the box we headed for JFK. I was totally preoccupied with the upcoming contest, but do remember the breathtaking views of New York City. Crossing over one of the bridges I could see there were hundreds of huge sailing ships in New York harbor for the celebration. The sheer size of the skyline was hard for me to comprehend and the

As we know now things can change in a matter of minutes and I only wish I had paid more attention to what I was experiencing.

Les anticipates a qualifying flight while pumping some of Doc Jackson's "Special Blend" into the 660. Photo: McDonald collection.

Twin Towers of The World Trade Center were magnificent along the water's edge. As we know now things can change in a matter of minutes and I only wish I had paid more attention to what I was experiencing.

The 1976 World Championships

Once at the airport I couldn't believe how many team members and supporters come on these trips and how Doc Jackson could manage all these people, some with the huge boxes. Somehow he had it all under control and simply told me, "From here on you just concentrate on the competition, everything else will be handled for you." Billy and I handed our passports to Jo Ann Jackson, since she now would become our personal "handler." Bob Gieseke wasn't there. His father had passed away the week before so he had family business as a top priority. Doc assured me that he would join us in a few days.

Off we go on a KLM airliner headed for Amsterdam.

Off we go on a KLM airliner headed for Amsterdam.

The plane ride is long so there's a lot of socializing between the team members. After a few drinks even the non-aeromodeling passengers join in. Back in the JFK terminal you could see their curiosity as to who we were and what were we going to do. One man was convinced I was a musician taking my own "Harp" to the Netherlands.

Gene had decided to bring his new bride along on this trip. An ex-Rockette dancer, Sue was blessed with lovely long legs enhanced by a very feminine derriere. I reasoned that she could cook too because I had noticed back in New Jersey that Gene had "put on a few pounds." Billy was being a bit rough on Gene about this and we both received a tongue lashing from Mrs. Schaffer. Why me, no telling, but she didn't like me either.

Sue was sitting in a window seat and at one point she needed to move about the cabin. As she stepped over a rather rotund Gene, in his seat, Billy casually said "I never thought I would see the day when the moon jumped over the cow." From that moment on Doc realized it was in the best interest of everyone to keep Sue as far away from Billy as humanly possible. In actuality Gene had been extremely trim and fit at the team selection the previous September, and that's the way we had remembered him.

Upon arrival in Amsterdam we cleared a very polite, efficient Dutch Customs and set about the business of gathering our fuel, a van, and finding our hotel. The most serious business finding a place to practice—would start as soon as we unpacked the planes and fuel.

In short order Doc provided the Stunt team with transportation. An ugly, orange panel truck with a light switch

clutch. Since I was the "junior" team member I rode in the windowless cargo area along with the planes and support equipment.

The hotel turned out to be a conference center, in a beautiful wooded area, near the small town of Zeist. Billy and I shared a small but comfortable room. This place was a treat for me. After so many stays at the Days Inn, Red Roof, Best Western, and all the others around America, I was finally in an old European lodge. There was even a large dining room in which great food was served, but because of our practice situation we only ate one or two meals there.

Since I was the "junior" team member I rode in the windowless cargo area along with the planes and support equipment.

I had been told in advance that finding a place to practice had always been a problem in the past. This time was no different. Here in America we can always find a place somewhere. A ball field, a parking lot, or an empty school yard, but when you have no idea where to look for these places you need to improvise. At the very crowded "official training area" we ran into Louis VanDerHout. He was the top Dutch Stunt guy and was thrilled his American friends, Gene, Billy, Bob, and Doc were in his country. He knew his American friends were used to doing many, many "training flights" and invited us to use a facility near his home in Hertogenbosch—50 miles away!

A bird in hand is worth two in the bush, so off we went. The facility Louis used for practice was a huge parking lot with shallow berms, similar to an old drive in movie theatre. We could fly there all we wanted, except on Thursday morning. It would then be used for the weekly cattle auction until about 2 in the afternoon. We all knew how to take off and land so the undulating surface was no big deal. It may have been a long drive but we had room for two or three circles and unlimited access. A small food market/deli was nearby and Louis's home was only a short drive away. We managed all these arrangements during the first day and a half. Stunt guys—including Doc who is an honorary Stunt Guy—are very resourceful.

Back in Miami, a month or so before leaving on this trip I requested one of our warehouse employees to ship 4 gallons of "my fuel" up North. That would be 4 gallons of K&B 100 (X2C). What I unpacked in Holland was 2 gallons of K&B 100 (castor oil) and 2 gallons of K&B 1000. The 1000 contained 25% nitro. A quick calculation had me "out of gas" in two and a half days. I did not know it at the time, but this would soon be just a minor annoyance, since I had not yet discovered that both my SuperTigre 46s were damaged.

At least I have enough fuel for now so let's see what we have. Billy and I mark off a circle, roll out our lines, and are ready to go—kind of.

I flipped the 660 to life and, in an instant, the nastiest brownish gold color goo I had ever seen came blowing out of the exhaust.

I had not heeded the warning, given to me months before, about all synthetic fuel. It was obvious. The reason it burns long and clean was simple. The engine burns it all, leaving no residue to protect the "innards" from rust. When you fly every day the moisture doesn't have time to attract rust. This thing had not been run for almost two weeks—plenty of time to grow toxic particles.

Thinking I just needed to "blow her out" I did that first flight anyway, and, as you can imagine, I was low on power. Billy flew next, and since he's never satisfied, he agreed the thin, hot summer air took away power. After another flight or two there *was* a difference. He was using a highly modified HP40 that had good compression. In my airplane lived a SuperTigre 46 with very little compression. After a quick disassembly and inspection I found that my backup engine was in the same miserable shape. The piston ring was pitted and the bearings had warts.

Doc came checking on us and I explained the problem. Doc had always been under the impression that Stunt guys always complained about something and it was usually just between our ears. He was convinced he could solve Stunt guy problems with some well chosen words of encouragement. Then he heard my engine. In his soft voice he said, "Sounds like crap." Then the good doctor asked, "What do you need?" "Power, I need power," I exclaimed. His answer was almost immediate: "You have it in the truck." You've been whining for two days about the 25% fuel you got by mistake. There's your power." Whoa, doctor smart man. The K&B 1000 fuel gave me back the power, but I didn't have enough fuel for the week, which was the first problem anyway.

Thinking I just needed to "blow her out" I did that first flight anyway, and, as you can imagine, I was low on power.

I'm a lucky guy. Back at the lodge that night we meet a US military man. Sgt. Don Schullian was there as a spectator and just wanted to shoot the breeze with Billy and me. "Sorry Sarge, I can't visit, I need to come up with an engine or find some nitro." "Wow, nitro is hard to find in Holland," the good Sgt. exclaimed, "But I can get some for you in Germany." The very next day Doc was in possession of 1 full liter of nitromethane. US military people are very resourceful. Thanks Sgt Schullian.

That afternoon Doc had blended up some fuel for me to try. "See how it works; we can tweak it if necessary," he said. After trying a few different combinations Doc hit the perfect brew and whipped up enough to last the entire week. Doc also worked up some juice for Billy. Thanks Doc. One night we were invited to visit with Louis VanDerHout and his wife Trudy, at their home. She fixed a pleasant supper and we drank a few beers. Out came the guitar. Louis, aside from being a good Stunt flier, had some talent with it also. Billy and Gene

both had professional musical backgrounds, so a "jam session" took place, and although I didn't participate in the music, I had a front row seat for a very entertaining show. I think Doc drove those 50 late-night miles back to the lodge …

The next day Bob Gieseke and his son Joe were due to arrive in Amsterdam. I, being the Junior team member, was sent to meet them. With great enthusiasm I headed from our practice site to the Schiphol Airport near Amsterdam. There was one problem. This was the first time I'd looked out the windshield since arriving in Holland. I had been riding in the windowless cargo area of the Ugly Orange Van and had no idea where I was or where I was going. I'm a Stunt guy, cunning and resourceful; the airport is big so I can find it. Bob Gieseke is big, in my eyes anyway, so I can find him. Problem solved—kind of.

> I'm a Stunt guy, cunning and resourceful; the airport is big so I can find it

The airport is easy, the Giesekes a bit more difficult but done. After Bob and Joe get their rental car I nonchalantly say, "Follow me to the lodge." Somehow I manage a wrong turn and deliver us into downtown Amsterdam. Without a clue as to where I am going Bob follows me right up a sidewalk/bikepath. I soon realize where I'm at and can't believe Gieseke actually followed me with complete trust. With an infantry of bicycles heading our way I slam on the brakes and make some hand gesture to Mr. Gieseke hoping he will back up and he responds by flipping on his windshield wipers.

Eventually I find the lodge and help Bob and Joe get settled. "You guys ready?" I say with a smile. With no idea in which direction to head I say, with total optimism, "Follow me to the practice site." It was almost dark when we arrived. Bob looked around and makes some comment about how Les made the small country of Holland seem bigger than Texas.

> With no idea in which direction to head I say, with total optimism, "Follow me to the practice site."

From this point on I was the designated Stunt van driver for two reasons. First I had mastered the light switch clutch of the Ugly Orange Van and second I knew my way around Holland—just about all of it!

Finally we are all together and working pretty well. Billy's plane, the Perroquet, is a small Ares type I beam ship. Done in white with beautiful green, yellow, and red scallops, it flies with authority. The engine is a modified and lightened HP 40. On long lines it looks and sounds good. Bob is, naturally, flying a Fox 35 powered Gieseke Nobler and Gene had a very nice, sleek silver ship called the Hallmark, this time with a single fin, and an ST46 for power.

On his first day at the practice field Bob walked over and asked if we had anything to drink. "Yeah in the truck, help yourself," I said and then Billy and I went back to whatever it was that had our attention. A few seconds later we looked at

Les fires up the ailing Super Tigre for his "official" practice flight in Utrecht while Billy contemplates the near future. Photo: McDonald collection.

> We saw Bob's head pitch backward and jerk the green bottle from his lips.

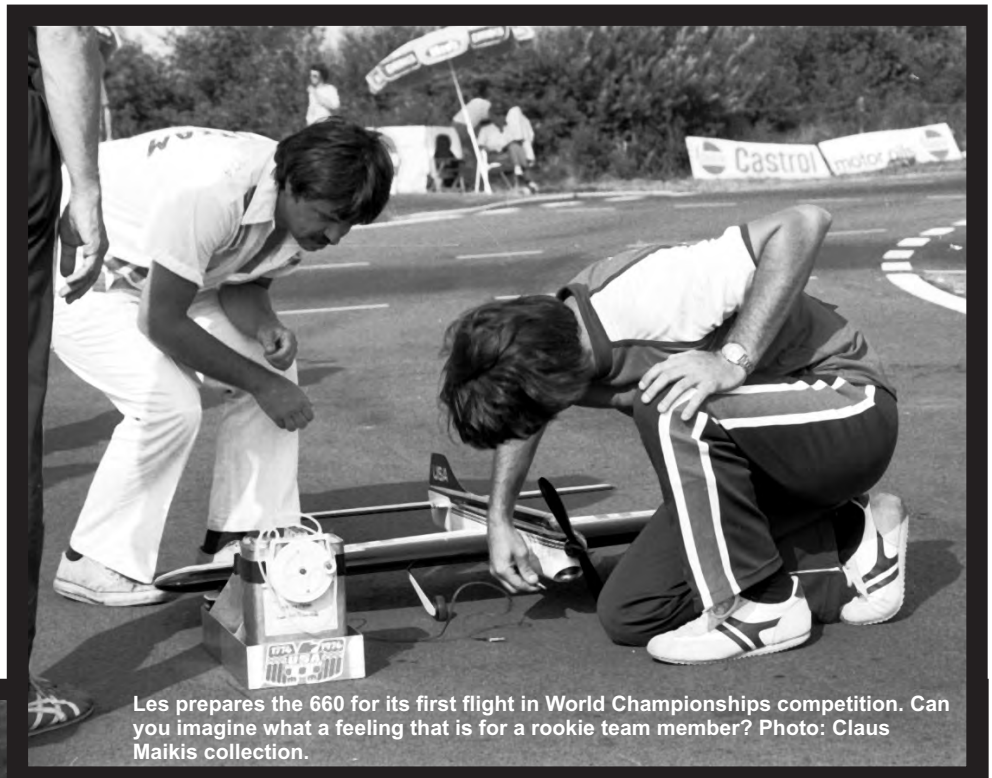
each other and then in unison screamed "Stop!" We saw Bob's head pitch backward and jerk the green bottle from his lips. We ran towards the Ugly Orange Van and apologized to our beloved, spitting Bear. The water was in a yellow bottle, the green one had Doc's nitro in it. Notice I said "*Doc's nitro*." Had he needed it for his motor it would have been "*my nitro*." He did have some minor lip damage, but he is a tough old Bear.

I was still not confident my engine would survive. It seemed okay but it wasn't terribly strong and I knew the difference between ring seal compression and nitro compression.

On the first day of competition a giant embarrassing problem arises. Louis VanDerHout wants to ride his motorcycle to the contest site so he asks us if we could keep his plane and stuff in our truck and meet us in the morning at the contest site. "No problem, when is your first flight?" He tells us it's at 7:15 a.m. "You can count on us, Louis." Duh.

Gene is scheduled to fly at 9:00 a.m. so we leave the lodge a bit after 8. On the short drive to the contest site the realization is crushing; we have Louis's plane in the back of our truck. As we approach the parking area we see Louis, hands out, shoulders shrugged.

Doc pleads with the jury, trying to right our mistake. This is terrible. I volunteer to give my flight time to Louis—not possible—I'm a team member and my points are needed. Bob volunteers his flight time since he's independent. No way. Eventually the jury allows Louis to fly later in the first round,



Les prepares the 660 for its first flight in World Championships competition. Can you imagine what a feeling that is for a rookie team member? Photo: Claus Maikis collection.

Les prepares to launch Billy's HP .40-powered Perroquet in the second round. Photo: McDonald collection.

The new Champione enjoys a few glorious moments on the podium. Flowers, Champaign, the World Cup, and a trophy girl ... Ya' gotta' feel, at least, a little successful, Les! Photo: McDonald collection.

luckily in better air and he puts himself in third place, right behind Bob and Billy. We still feel like ugly Americans.

My first round flight was nervous, so I was happy to be in fourth place. With everything that Bob had been through he still had things going and was leading the first round; he really is a tough old Bear.

In the second round I flew early and moved into third place with a score very close to both Bob and Billy.

My first finals flight moved me into the lead but I was totally convinced someone would get a giant score in the second finals round. I was resigned to be second or third and okay with it. I saw very few of the official flights. We were only at the field for our flights since both Bob and Billy advised me that there were way too many distractions on the site. Everybody wants your time, advice, a picture, or something, and it becomes hard to concentrate. Just fly and wait for the scores.

Gene had some problems early on and we all tried to get him back on track for team points. Doc must have said something magical, because Gene sucked it up and flew a good second flight to keep the team trophy in America.

After my second finals flight I got a beer and went back to the truck. I was spent. I was happy to make a good showing on my first time out and hoped that when the big score came it would be Bob or Billy. I went back for another beer. Waiting for the scores was unnerving .

While rustling through the back of the Ugly Orange Van Billy came by, stuck out his hand and said, "Congratulations, you're the new World Champion." I was stunned. This was way beyond comprehension. Within seconds I was surrounded by well wishers and hurried off to the podium. To say I was caught up in the moment would be an understatement. Now I not only looked like Mario Andretti, I was a Champion like Mario Andretti.

I knew at that instant no matter what happened during the rest of my life I would always have this. The euphoria was palatable. Up on the top step of that podium, waving around the flowers and the World Cup filled with champagne, the moment only lasted four or five minutes; the pride would last me forever.

For the next 15 or 20 minutes I was hustled around the scoreboard area for photos and official chit chat, then it was time to go and get ready for the banquet. I wanted to get back on the podium and do it again. but that would have to wait a few years and take place in some other country.

In between leaving the contest site and arriving at the banquet I spent several minutes alone, in a hotel office, calling home. "Nancy I won, can you believe it?" Silence. Then she asked "Are you crying?" After a very short conversation I said "goodbye." Found another beer and called my Mom. I said, "Hi Mom," and right away told me she had already heard that I had won and then she asked "Are you crying?"

At the banquet I lived my "15 minutes of fame" to the max. After food service and the awards ceremony the banquet turned into a huge, loud, rowdy party. As told to me the next day, I was one of the instigators.

Back then it was a tradition for each team to provide its nation's popular form of beverage at the team table, and I traveled the room. I was somewhat experienced at this sort of behavior but never before on such a grand scale. Back then, at the banquets, World Champions were treated like movie stars on "Oscar" night.

The award banquets now are almost solemn affairs; very polite and politically correct, which is probably a good thing. Personally I prefer the old time banquets, especially if you're the winner!

Billy and Les

The next day Doc, JoAnn, Billy, and I take off South to spend the next four or five days sightseeing in Switzerland. We end up staying in Lucerne, a fairy tale city nestled in the shadows of The Alps.

Billy shared in the joy of my victory and I shared in the agony of his second place. Before this contest, second place, to me, would seem to be a glorious position. But now, after winning, I understood the pain. Billy flew to win and from this

Above: Back in Miami, Les displays his FAI awards from the '76 World Champs. Left to right are the Steve Wooley Cup, the FAI Gold Medal, and the UHU World Trophy. Photo: McDonald collection.

Right: Orange Blossom Hobbies presented Les with this very special, hand-crafted award upon his return from Europe. Photo: McDonald collection.

moment on I did also. In fact
I became confident I would win every contest I would enter from this point on. Of course the reality is much different, and I was going to experience reality in a few short weeks, at the Nats.

Billy and I were already good friends and we spent one afternoon hiking, well, maybe more like walking. Eventually we sat down on the side of a mountain, with the Swiss Alps in full view and started talking. I became aware of his absolute love and respect for Steve Wooley and Bob Gieseke and he understood some of my bad habits and frailties. Billy was "The Searcher," each day spent trying to find perfection in his program. Every detail created a question he would try to answer for his own gratification. I, on the other hand, tried to master every facet of my program in the most simple and basic way possible. I reasoned that if kept simple I could master more facets. Billy would solve problems, I would work around them; same quest, different method. Billy was a "lifer," I was just passing through.

I need to get home

One night, in an upscale Lucerne bar, a lovely lady made a modest advance toward me and a short discussion terminated her visit very quickly. The theme of the conversation was overheard by Doc, and from that moment on I became a hero of sorts to him and would forever be known as "The Jelly Man."

It was time to go home and prepare for the Nats. I had less than three weeks to produce a new engine and fuel program.

After the long flight back to New York, we were welcomed home by being treated very shabbily by The US Customs Service. The agents were rude and arrogant, but the big

problem came when we tried to leave with our model boxes. It seems as though they had some sort of deal with the Skycaps. Doc, Billy, and I actually got into a shouting and pushing match with two or three of these bullies. We prevailed after several minutes of this nonsense but the bad taste is still in my mouth.

Later that night, upon returning to the Simons' house, a victory party was being held in my honor. I was flattered that all these New Jersey guys were truly happy for me, and we partied into the wee hours. Thank you so very much Bill Simons for all your help, encouragement, and friendship.

The next morning we picked up my trusty Datsun—with a very well done rebuilt engine and I headed for Remel Cooper's house in Jacksonville.

I was exhausted. We had driven from Switzerland to Holland and then sat through a nine-hour flight to New York. Driven from JFK to the Simons' house in North Jersey—with a late night party thrown in—I picked up my car at the dealer and then had to get back to Florida—the bottom part. This was the trip where—as I mentioned in part I of this saga—I had become so disoriented, thankfully discovering I was on I95 in South Carolina.

I made a quick stop at Remel's house, showed him my shiny new trophies, and thanked him once again.

I was anxious to get home, not because I missed my pregnant wife or my friends at work. Not because my mother always worried too much when I was away. Not even to bask in my new found celebrity. I was anxious to arrange some castor-based fuel and try to build a good running SuperTigre. It seemed I only cared about my placement in the world of Bob, Billy, Gene, Al, Ted, Wynn, Keith, Robin, and a few others. I had become totally unbalanced. Like all whackos, I was in denial. I thought I was okay. The hobby part of flying Stunt departed my mind back in 1972. By 1976 it was a quest. After winning the World Championships I considered it a noble cause, but in reality flying Stunt for me had become a selfish, egotistical mission.

For years Nancy slept on a sofa, lived with paint fumes and balsa dust, ran every errand and took care of everything so I could build and compete with my model planes.

Something I regret

A week or so, after returning from Europe, a co-worker suggested we have a beer after work. "Are you nuts, I have to go check this new engine," I exclaimed. He admitted he had been assigned the task of getting me home that night where Nancy had arranged a big surprise party to celebrate my victory. She had been working for days getting everyone together and had even baked a "Stiletto" cake. My co-worker begged, "Please act surprised."

When I hit the door I was furious that Nancy would interrupt my quest with something as trivial as this and I pointed it out to her. Some things in life you say or do can never be righted and this was one of those times. For years Nancy slept on a sofa, lived with paint fumes and balsa dust, ran every errand and took care of everything so I could build and compete with my model planes.

The party was wonderful, and even though I apologized and thanked her for everything, I know the hurt was still there. I justified this insanity by telling myself I would make it up to her after the Nats, not even thinking about how everything will change after the arrival of the baby.

Fresh from my big win in Holland, this was my Nats to lose.

The 1976 Nats

The '76 Nats was in Dayton, Ohio. This was the third time PAMPA ran the Stunt event and this year Bart Klapinski was the Event Director. Bart is without doubt the best "natural" Stunt flier on planet Earth and was, thankfully, not competing at this Nats. Normally one or two top guys will miss a Nats now or then, probably to do some normal, balanced life thing. Not this one; everybody was there. Like all PAMPA contests it was extremely well organized and ran hiccup free.

We still had the usual extended pilots' meeting, because someone always starts some debate about hand signals or where the landing descent starts, but the actual competition ran smoothly.

Fresh from my big win in Holland, this was my Nats to lose. The new engine and fuel combination was working okay and I knew the 660 well. I had worked hard to be in this exact situation and now was the time to shine.

I sparkled in qualifying and chrome plated my position during a rain storm in the first round of the finals. The scores went up just a few points in the second round and the air was much better. I was in the catbird seat with my flight next to last in the final round. Only Bob Hunt was scheduled to fly after me. After having an overrun, Hunt fell to 19th place in the first round of the 20-man finals. He had also just driven over the nose of his Genesis with his station wagon. Like I said before, this Nats was mine to lose, and I did just that.

I still may have not won, but the attempt would have been the proper move.

In virtually dead calm air, and a tad rich on the needle, off I went. "Whoa, the old 660 is kinda slow," I remember thinking, but there was no way I was waving off. Nice slow Gieseke type wingover, a few steps backwards to avoid the turbulence for all the other stuff, and it was looking good.

Bad luck turned good: Bob Hunt backed his car over his Genesis, then fixed it and then won the 1976 Nats with it! Kind of spoiled Les' first WC year … Photo: Wynn Paul collection.

In the overhead eights I knew I was in trouble, and sure enough the new SuperTigre had only enough fuel for the first loop in the cloverleaf. Silence. Land. Nothing else to do.

Bob Hunt goes up for the last flight of the contest and, at that moment, I could care less. Good air, nice flight, Hunt wins, with Schaffer in second once again. Gene was an incredible flier and always right there. It is almost sad he never won a Nats. I wound up in seventh. I simply should have called an attempt and flown after Bobby. I still may have not won, but the attempt would have been the proper move. I was happy for Bobby as was everyone else. It was a clean win and Hunt was very popular with a large following of friends.

I had survived my nightmare and deep down inside no one really cared. This was not life altering. All the scary dreams about showing up late for a flight, losing my model box and running out of fuel were just that—bad dreams. I will admit though for many years after I stopped flying I still looked out the bedroom window each morning to check the trees for wind. I no longer watch the trees. However, from time to time, I still have the dreams.

Twenty five years later I'm still not over it. SN

Crash Repairs

By Windy Urtnowski

In the past year I've expanded my business to include working on motorcycles and making custom carbon fiber motorcycle parts. It has allowed me to use modeling techniques to create custom parts, and from the motorcycling industry I've found some materials we can use to repair models very conveniently.

One material of interest is a thixotropic resin Pro Set 175—when used with 273 hardener; it makes a bond much stronger than any hobby epoxy. Thixotropic means it doesn't run; it stays where you put it. Both Dave Midgley and I have used this in many ways to repair both wood and composite parts. It's the material of choice to repair broken fairing parts on motorcycles that have been crashed.

An excellent use is on any wing-to-fuse joint during construction, but even better if you're repairing an ARF where this joint has failed. Be sure you're not gluing to MonoKote—strip it away and glue wood to wood.

Repairing anything with this resin is possible — it bonds virtually anything bondable, except Teflon. On profiles you can create small fillets with a prop blade, but make them smaller than you would if you used Aeropoxy Lite, as the resin material is heavier.

Use a hair dryer to thin the material slightly and get a bit better penetration if you're gluing doublers to fuselage sides or making a new wing-to-fuse or stab-to-fuse joint. Remember: all epoxy joints, whether new or repairs, should be grease-free, clean, and *toothed*, especially when bonding already-cured epoxy parts.

Hot tip: Clean your hands with soap and water if you don't wear rubber gloves. Never clean hands with alcohol or acetone, because you're diluting the material on your hands and rubbing it into the pores!

Pro Set adhesives are available from Gougeon Brothers, P.O. Box 908, Bay City, MI 48707; Phone: 517-684-7286. Their Web site is http://www.gougeon.com. By the way, Gougeon Brothers is also the manufacturer of the excellent West System line of epoxies.

I also was able to repair a carbon fiber Suzuki muffler using the same materials I use to make tuned pipes. A replacement part would be about $1,000, but the repair was under $100. This sharing of one technology to another helps both venues. I've also used the molding techniques I've used to make model cowls to create unique motorcycle parts. It's been fun seeing my antique Suzuki, and the seat I made for it, alongside the Testarossa F2B ship, with both having used exactly the same technology to make the parts. That picture appeared in the April 2009 issue of *Road Bike Magazine* (p.12), and I think it's the first picture of a CL Stunt ship in a major motorcycle magazine. SN

PAMPA Products Price List

Prices Effective January 2008

FAI RULES: F2B Current Year ..... $ 2.00

AMA RULES: CLPA Current Year 2.00
CLPA 1951-52 (Old Time Stunt) 2.00

PAMPA RULES: Bylaws ..... .25
Old Time Stunt 1.00
Classic Stunt ..... .25
Rule Change Proposal Form ..... .25
Rules Committee Procedures 1.00

PAMPA GUIDES: For Contest Directors 2.00
For Nats Event Director 5.00
For Nats Tabulators 2.00
Nats Judging Guide 5.00
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PAMPA FORMS:
Maneuver Diagrams - Modern Pattern ..... .25
Beginner Pattern ..... .25
Old Time Stunt ..... .25
Critique Sheets - Modern Pattern ..... .25
Beginner Pattern..... .25
Old Time Stunt..... .25
Score Sheets - Expert, Advance, Intermediate ..... .25
Beginner ..... .25
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Contest Forms - Scoreboard Sheets (24" X 36") * 5.00
Scoreboard Sheets (8 1/2" X 11") .... .25
Registration Forms (One per Event) ..... .25
Master Check Sheet for Head Judges ..... .25
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STUNT BIBLIOGRAPHY: 10.00
42 Page List Chronologically By Subject of all (4000) Published Stunt Articles

ARTICLE REPRINTS*: As Listed in Bibliography per Page ..... .25*

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Life Time Competition Records by Wynn Paul (20 Pages) 2.00
Master Plans List by Bill Dawson (30 Pages, 600 Planes) 3.00
Control Line Source Book by Ralph Wenzel (14 Pages, 140 Suppliers) 2.00

PAMPA BOOKS:
Old Time Stunt Page Plans by Tom Morris (84 Pages) 8.00
Classic Era Page Plans by Tom Morris (148 pages) 12.00
Pioneers of Control Line Flying by Charles Mackey (184 pages) 12.00

MAILING LISTS, LABELS, DISKETTES: (Order from Dave Gardner)
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Zip Code List of U.S. Members 3.00
List of Members from Other Nations 2.00
Labels of U.S. Members 25.00
Labels of Members from Other Nations 15.00
List of Members with in Your District 1.50
Labels of Members within Your District 10.00
Membership List on Diskette 5.00

PAMPA TEE SHIRTS: 10.00
Sizes - M, L, XL, XXL, XXXL *(Add $1.50 for XXL and XXXL)*
Colors - White, Black, Red, Sky Blue, Royal Blue, Navy, Teal
Note: List several color choices in case your first choices are out of stock

PAMPA GOLF SHIRTS: ..... $ 25.00
Sizes - L, XL, XXL, XXXL *(Add $1.50 for XXL and XXXL)*
Colors - White, Black, Red, Royal Blue,
Note: List several color choices in case your first choices are out of stock.

PAMPA CAPS: 10.00
Size - One size fits all
Colors - White, Black, Red, Sky Blue, Royal Blue, Navy
Note: List several color choices in case your first choices are out of stock

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Full color water transfer decals Sheet with one large & two small.... 2.00

PAMPA PATCH: *(Cloth 3 " Four-Color)* 2.00

PAMPA PIN: (1 1/4*"Metal Lapel Pin, Five-Color)* 4.00

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PAMPA News and Reports

PAMPA officer reports and organizational information.

Secretary/Treasurer's Report

By Dave Gardner

This picture was taken by my bride, Angela, at a sidewalk café in Lyon, France, after the 2006 World Champs in Valladolid, Spain. The bottles are *water* bottles!

By the time you get this, you've received your ballots and voted, with results in the November/December issue. You also received your 2010 membership renewal form and a great deal of you (actually, about 400!) have responded to that, at this date of mid-November.

We had the usual issues with some invalid ballots. Some were just late, even after moving the receipt date out by two weeks. No biggie … I counted every one which came in through October 24.

Amazingly, there a lot that did not have a name or district on them—the first line of the instructions said "First, fill in your name and district number." If the ballot was in an envelope with a return address, I added that to the ballot and counted it.

Second, several folks voted for *all* the district candidates, after the instructions on the front and the back of the form said to please only vote for the director of your district. If I knew the district number, I counted that vote as well. Geez, how do you folks build airplanes?

Others chose not to vote for all the candidates, which is everyone's prerogative, but I think more an overlook.

On the Bylaws proposals, the votes were pretty unanimous in favor of the changes. That reflected a thoughtful approach on the part of the Executive Council in the initial proposals. I think, however, that some misunderstood the change relative to the *Stunt News* editor's position on the EC and voted against the measure.

The change was at the request of the current editor! The real intent behind the change, though, was that the editor is an appointed job—a *very* important job—but not an elected position. The EC is more like Congress for Stunt fliers, on a more limited scale, where the officers and directors are the representatives of the membership.

The second change, to increase the responsibilities of the Membership Chairman, passed unanimously! For this, your current Secretary-Treasurer thanks you profusely!

There was a very big mea culpa on that membership form, however. I was more than clever by half with the legal-size form … another plan not fully thought through! The difficulties with this form are printing it in *Stunt News* and downloading it from the Web site.

The part that bit me, however, was not recognizing that the long end would have to be cut off from *all* the forms, not just the credit card ones, making one more step in the process! This is to be able to file the completed forms in the membership records, which are letter size.

A revised form has been created and should be on the Web site now, as well as in the November/December issue.

By this time, you're aware that the elections have brought onboard Noel Drindak, of *Stunt News* fame with his great column, "We Have the Technology," as our new Membership Chairman. Note that *his* name is on the revised membership form, with address and phone number. Officially, Noel will take his position on January 1, 2010.

In the interim we're working on the transition of the membership files and activities. For the majority of you, this should be a transparent and seamless transition.

That noted, I'd like to present some contact points for PAMPA, for specific issues. As it is now, too many members have only one point of contact with the officers—the Secretary-Treasurer—who then has to pass on the item to the one in charge. This needs some change, as follows:

- For issues and comments with the general administration of PAMPA and its workings, contact the President, Bill Rich: (813) 681-9832; richvalrico@aol.com.
- For issues with membership and related activities, contact the Membership Chairman, Noel Drindak: (518) 399-5939; drindak@googlemail.com.
- For items having to do with *Stunt News* content and editorial activities, contact the Editor, Bob Hunt: (610) 746-0106; robinhunt@rcn.com.
- For PAMPA Products orders and delivery, contact Jim Snelson at PAMPA Products: (505) 332-8007; pampaproducts@hotmail.com.
- For Web site issues, passwords, etc., please contact our Webmaster, Bob Kruger: bkruger@mindspring.com.
- For items and issues relative to specific operational problems and financial issues, contact the Secretary/Treasurer, Dave Gardner: (425) 235-5190; davegardner55@msn.com.

All these folks have contact information in *Stunt News* and/or in the directory, with phone numbers and e-mail addresses. Following these guidelines will get you your answers more quickly by going direct to the source!

This should improve your PAMPA experience, and not be one more PITA to deal with!

Thanks, and tight lines! SN

District I

By Dave Cook

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Some Thoughts on New Rules and Old Rules

How square is square? A recent thread on the Stuka Stunt Forum was started by an English judge who stated that he downgrades for too sharp a corner. This was quickly jumped on by the American Stunt community sighting high-speed camera studies that showed even a corner that looked sharp to a human judge was not a 5-foot radius. I think that this a basic difference in judging between us and the FAI community.

Originally, to set up the rule book requirements, the square corner was eyeballed and estimated to be "apparently (looks like) a 5-foot radius." This is what we wrote into the rules when I was a member of the Contest Board back in the 1950s. Subsequent work by Bill Netziband and others concluded that, for current models, attaining anything like a 5-foot radius corner for a high-speed camera is difficult to impossible.

But several pilots are capable of executing corners that look sharper than a 5-foot radius to a human judge. The judge sees a very sharp corner even though a high-speed camera shows otherwise (see the diagram).

If we look further at it, from a tolerance point of view (+/- 2 feet), the pilot is actually allowed as sharp as a 3-foot radius up to as soft as a 7-foot radius. From this, the US Stunt community has generally concluded that there is no such thing as too sharp a corner as long as it stays smooth, on track and without any extraneous bumps or wobbles. This is what I taught in my 11-plus years as chief judge at the US Nats and Team Trials.

But the bottom line is still the judge—if you think you see a corner that is sharper than a 5-foot radius, score it that way. There are no high-speed cameras on the field and, last time I looked, the rule book still calls for human judges.

New Rules: We are coming under changes to the AMA rules in the 2009 season that impact us right down to local contests. The changes will parallel us closer to FAI rules. Mainly pattern points have been eliminated and an FAI-type 10G pull test in which the model has to be weighed and pulled to 10 times the scale weight. The line requirements have been changed and line size is now determined by the weight of the model.

The elimination of pattern points resulted in the following: the 10-point award for an attempt is gone. An incorrect maneuver (incomplete, omitted, incorrectly entered or exited, as well as too many maneuvers in a set) results in zero (0) points for that maneuver. In the case of an omitted maneuver, the next maneuver in sequence will be considered a continuation of the pattern and be scored. An omitted maneuver cannot be made up at the end of the pattern and the score remains zero (0).

There are some local interpretations that we plan in District I. The first is forced by lack of action on the Builder of the Model rule. District I contests will allow aircraft that you did not build, including ARFs into completion under the following rules. An airplane that you did not cover and/or paint will receive zero (0) Appearance Points.

If you are to receive Appearance Points you, the flier, must have covered and painted the model. If you did not paint or MonoKote the model the score for appearance points is zero (0). The logic being, you are being scored what can be seen (the covering and paint or MonoKote job) so you cannot have somebody else do this work for you.

District I contests will try a season running what we have named "Real Old Time Stunt." Essentially bottoms at 5-foot altitude or shoulder height, loops at 45 degrees (with a maximum of 60 degrees for OT ships that cannot do a 45-degree loop), and two AMA square loops instead of the one rectangular loop as called for now. I feel strongly that this better represents what was really flown back then.

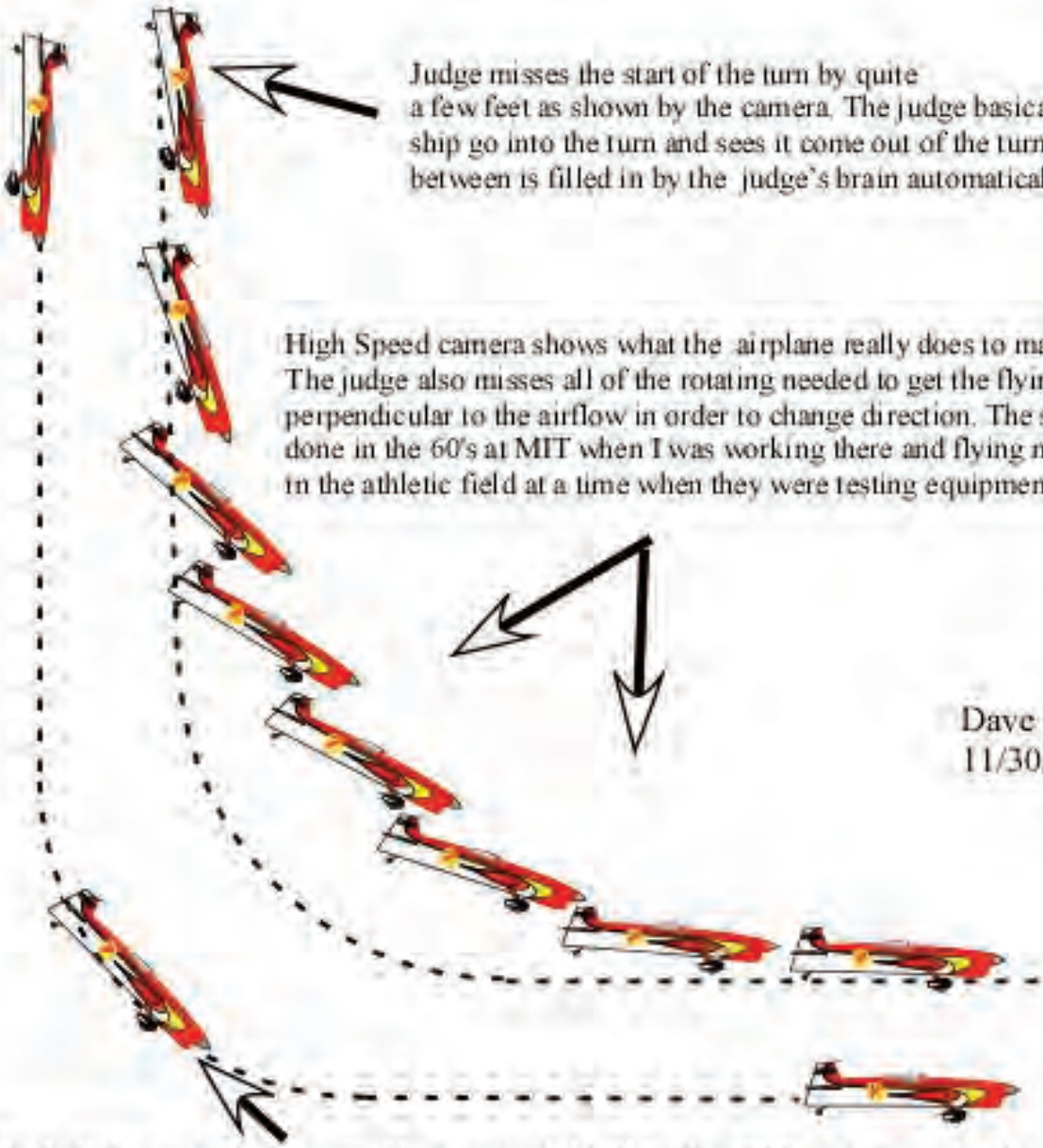
Raising bottoms to 6 to 10 feet and promoting 60-degree loops is an insult to those of us who flew Stunt back then, at least in District I. These sentiments were shared by Lou Andrews, Harold Debolt when they were still with us.

Stunt is a competitive sport flown by those who want to compete. You may compete in a skill class or just compete against yourself, but you compete. Now you admit you do want to be in competition and with that goes the drive to get better.

How do we get better? Better equipment, good coaching, more practice and becoming a true student of the pattern and judging. The judge's subjective opinion is the only one that counts and you fly for the judge. The better you understand what the judge is looking for the better your chances of winning. SN

—Dave Cook

Comparison between what a judge sees and what a high speed camera sees on the same 5' radius corner (conclusions from unoffical work done at MIT in the 60's).



Judge misses the start of the turn by quite a few feet as shown by the camera. The judge basically sees the ship go into the turn and sees it come out of the turn. The space in between is filled in by the judge's brain automatically.

High Speed camera shows what the airplane really does to make a corner. The judge also misses all of the rotating needed to get the flying surfaces perpendicular to the airflow in order to change direction. The studies were done in the 60's at MIT when I was working there and flying noon times in the athletic field at a time when they were testing equipment.

Dave Cook
11/30/08

The Judge's perception at normal human capability (less than 30 frames per second) only allows them to see a couple of frames. The Judge's brain fills in this point as an expected next position (deduced from the earlier position and heading). Common video cameras only run at 24 to 30 fps. and are subject to the same probem. Only a high speed camera (600 + fps) will show what is really happening.

District II

New Jersey, New York

By Windy Urtnowski

I would like to introduce you to a person who shares many of my passions and has had a lifelong interest in Control Line models. His name is Billy Sargent and he's been a professional motorcycle racer for most of his life, and once had his own riding school.

Billy has flown models since his childhood, virtually every Scientific kit and Sterling kit, as well as a few custom models. He's currently a student pilot and is looking forward to owning his own aircraft in the near future.

During this contest season he has started competing in District II. He is building a Brodak Cardinal ARF and a Strega ARF. He has been flying all summer and is learning the PAMPA Pattern. By the time you read this, I suspect that he'll have mastered the Beginner Pattern. He's planning to scratch-build his own ship over the building season and hopes to improve his skills in 2010.

Karyn and I have become good friends with him and his soul mate, Melinda Singer. I've asked him to write a bit about his adventures in modeling. His childhood memories are mirrored by many of us who grew up dreaming of the models we'd build. Thanks, Billy for sharing your memories in the following story:

Billy's Great Adventure

"To this day I remember late spring of the year I was eight. I just loved model airplanes and had my eye on a pink Sport Cox airplane. Since I knew that I would have to pay for it myself, I saved every penny I could and did every chore around the house that my parents would allow me to do. I'd get 50-75¢ to take out the garbage for my mother and another 50 cents for an odd job here and there. I asked a few neighbors if they would help me earn some money, and they allowed me to sweep porches, rake leaves, and clean up gardens, but I still didn't have enough.

"I believe the airplane I wanted was $15. I had amassed only $11, so I asked my dad if he would front me the rest of it. He agreed.

"I bought that airplane, even though I did not know how to fly. My friend, Bobby Paper, had a family who knew a lot about aviation. (Bobby's father would later take us up in the Civil Air Patrol planes and let us fly.) Bobby and I went to the local park and he helped me take off and then taught me how to fly the airplane. I was the most excited kid who ever lived!

"One day I tried to fly this airplane myself, but crashed on my first attempt. It was in a thousand pieces, most of which I sadly scooped up and brought home. Bobby was at the school park and he saw me walking, carrying what was left of my beloved plane. When I told him what happened, he commented, "It ain't over yet. We still have a tank and a motor. We'll go to the model store."

"I got $4 from my father. I bought one container of green paint and a Sterling Messerschmitt. I did not want a German plane; I wanted an American one. But Bobby had it all figured out. He went and got me American insignias for that plane.

"We went back to my house. He taught me how to sand and how to use an X-Acto knife. We took the engine and tank from the crashed plane and put it in this plane and then we went back to the park to fly.

"He said, "I will show you how to do a loop." I was afraid to do a loop because the last time I tried one, my plane crashed. He repeated, "We are going to do a loop and I will show you how to get the plane to gain airspeed to do it right. You make the plane go up the hill and down the hill. Then up the hill and keep pulling back." He had his hand on mine and said, "Keep pulling the plane over," and the plane did it successfully. I was thrilled!

"During the years that followed, while life happened and I grew older, I never lost my love of model planes and aviation in general. I raced motorcycles professionally and continue to ride motocross and anticipate competing again next year.

"Flash forward 35 years. I started flying again about two years ago, with 1/2A models. Then my girlfriend and I went to Flushing Meadow for a model plane contest. I was totally blown away by the skill and beauty of the planes. There I met Windy Urtnowski and his wife Karyn. We did not meet up again until almost two years later when Windy was looking to buy a motorcycle from the dealer where I worked. He encouraged me to attend the Brodak Fly-In this year where we met many wonderful people who have now become part of our extended family.

"Windy was very patient with me as he taught me how to fly the Beginner Pattern in Control Line Stunt. He is my mentor and friend and as I improve my skills and learn to build, I experience the same happiness that I felt when I was eight years old, with my first Sport Cox airplane.

"But, my greatest joy is flying at a local park, with my girlfriend right beside me, and performing an overhead loop and other maneuvers, still hoping not to crash. It is a truly wonderful sport. I am a happy man!

"Here are some photos of the models I've built recently as well as the motorcycles I've raced." *SN*

Ohio, Pennsylvania, West Virginia

District III

By Patrick Rowan

No column this issue.

Delaware, District of Columbia, Maryland, North Carolina, Virginia

District IV

By Steve Fitton

Hey everybody, I hope you have enjoyed this "Special Issue" of *Stunt News!* After recovering from my initial panic about having to come up with an article about stuff not really on the beaten path for the district, I think I managed to find some good stuff to talk about.

One event in the district that gets mentioned sparingly in issues of *SN* is the annual Norfolk Aeromodelers Building Contest. This year, coverage was going to be even less than usual, due to the fact the library where the contest is held evidentially decided they could save money by not replacing half the light bulbs in the building. The result was that all the pictures shot by the little digital cameras the club had were quite unusable. To get around this inconvenient fact, we ended up photographing the winning planes at a field session, where we had enough light to take photo images you could actually see when printed in the magazine.

The Aeromodelers Building Contest isn't really about building; it's a Concours contest. It was originated as a way to encourage club members to build new planes over the winter, and had rules such that you had to enter a new, unflown plane. Instead of using a panel of judges, the entrants themselves judge and vote on the best-looking new model, with cash prizes going to the top three vote getters.

Some years bring out more new models to ogle than others, and there have been in fact years with such low participation that even some of my ugly models won! But this year brought out an entry that was truly extraordinary! Some of you might remember the name of Mike Ames from the Stalker engine advertisements from about 10 years ago. The ad used to have a picture of one of Mike's masterful Urtnowski Cardinals with the Stalker engine installation. Mike couldn't get out much because he was active duty Navy at the time, and most of those fantastic airplanes were made aboard his ship. Mike has completed his Naval service now and has taken a long enough break from making custom choppers to turn his attention back to Stunt, with the result being the amazing Granville Brothers inspired model you see here.

Mikes Ames proudly displays his brand new Gee Bee-styled Stunt model. Ames placed first at the Norfolk Aeromodelers Building Contest with this spectacular model.

Another view of Mike's new Gee Bee. This model weighs 76 ounces, has 720-square inches of wing area, and is derived from the full-scale Cardinal in terms of moments, areas, and airfoils. Power is a Stalker .61 rear exhaust fitted with a Bolly 12 x 6 prop. Construction is built-up wing and fuselage, with both planked and molded skin. Covering is Super Coverite with painted finish.

This view of the bottom of the Gee Bee shows the unique wheel pants Mike came up with. Also notice the external bracing wires that are on both top and bottom of wing. There is a miniature turnbuckle system to tension the wires. It's hard to see in the photos, but the wing also has dihedral.

The nose of the Gee Bee looks pretty motivated! The "gun port" openings above the spinner are ports to reach fasteners to slide the upper part of the cowl forward to remove it. The big Stalker power plant is completely cowled in.

Check out that tailwheel!

Mike's Gee Bee uses an interesting cowl system. The bottom opens conventionally, then the entire molded top and front can slide forward off the airplane, giving excellent access to engine and tank.The

Gee Bee in flight.

With any luck, Mike's Gee Bee will be around for many flying sessions to be examined and photographed. This plane was completely scratch-built, and as such there are no plans for it, but there are some people around who might twist Mike's arm to make a set. We'll have to wait and see.

One of the master Free Flight guys from the old Brainbusters club, Artie Jessup, placed second at the building contest with his very well-executed profile Cavalier. Artie used a silkspan and dope finish on his new bird and an LA-40 for power. This scratch-built effort is the second one I believe he has done in the discipline of Stunt, the other being an excellent Veco Squaw he placed within the building contest a couple of years ago. With Artie's flying skills rapidly developing, it's fun to watch his building skills for Stunt growing even faster, ensuring that Artie will have a good supply of superbly constructed and finished models for future competition.

Artie Jessup poses with his profile Cavalier. Artie placed second at the Club Building Contest with this very well-executed model.

The final spot on the Building Contest podium belonged to Jimmy Welch and his scratch-built profile Time Machine 60. This was another of Jimmy's "one-week special" projects: He borrowed a set of plans at the club meeting, and a week later the finished plane was putting in its first flights at the field. This model sported a set of foam wings, that Jimmy made himself, and a balsa/carbon/glass vacuum-bagged fuselage painted with automotive paint. One of Jimmy's ever-expanding collection of Saito 62s powers the Time Machine with authority.

Jimmy Welch's profile Time Machine 60 took third place.

If you have been reading the issues of *Stunt News* from the late winter/early spring timeframe, you will recall that a recurring theme in both Editor Bob Hunt and President Bill Rich's columns concerning mentoring and helping fliers trying to better themselves in the world of Stunt. I wanted to use this space here to recount a story that, to me at least, means that sometimes mentoring somebody can be as simple as a kind word at the right time.

If you have been in District IV, or really anywhere in the Southeast, for any amount of time, then you have probably run into North Carolina's Tommy Luper. I flew my first contest in 1998 and Tommy was a fixture at that contest and virtually every other I went to until some back problems curtailed his attendance in the last year or two.

Tommy has always been known both for his gentlemanly nature as well as tremendous craftsmanship and piloting skill, especially in the field of Old-Time Stunt, and he picked up a number of Expert Stunt victories flying the same OTS ship he had usually cleaned house with the day before in Classic as well as Old-Time.

I personally have never known Tommy super well. We have exchanged a few phone calls here and there as well as both being at the usual greetings at contests, or the bull sessions in the hotel rooms after Charlie Reeves or Terry McDowell cranked up the ice cream machine.

Nevertheless, Tommy was happy to spend an hour or so, on the phone with me back in late 2004 when I was starting work on my Time Machine 60. Tommy had been flying a rebuilt version of the TM 60 at that point, along with his OTS fleet, and pretty much everything in his setup was copied by me in my airplane. Tommy's setup was so good that today in 2009, four years after my Time Machine first flew, the trim setup and motor package is essentially identical to what he first told be back in '04. Tommy's hour of assistance has paid off in years and 600 flights of the best flying airplane I've ever had.

In spring 2005 the Time Machine 60 got me my final Advanced victory at Marietta, and I decided that it was finally time to move to Expert. Two weeks after Marietta I found myself walking out to the Expert Circle at Huntersville, way more nervous than I had ever anticipated and acutely aware of all the discriminating eyes of the other Experts watching and wondering why that fool Fitton was walking out onto the Expert Circle and not the Advanced one.

Tommy ended up launching me on that first foray into Expert, and I treated him to one of the worst showings of flying ineptitude ever displayed at Huntersville. I guess the best I can say for that flight is that I didn't crash.

When I landed, embarrassed and wobbly kneed, somebody else had walked out to pit the plane, but Tommy was waiting at the side of the circle for me as I walked off. He had a broad smile on his face as he stuck out his hand and said, "Welcome to Expert!" I was both honored and humbled that one of the best Expert pilots in the region would say something like that to me, and I never forgot it. Next I was amazed as it seemed like every Expert there came over to shake my hand and welcome me as well.

My second flight wasn't quite as bad as the first round, but I was still solidly in last at the end of the contest. That finish was essentially exactly what I expected my first time out, but it was still a sobering drive home that afternoon. Two weeks later the traveling circus that is East Coast Stunt made the pilgrimage to Brodak's Fly-In, and, as I landed after a pretty good first round Expert flight, there was Tommy, again waiting at the edge of the circle with his hand out and a wide grin on his face as he exclaimed, "This time ya' showed them you belong here!"

The final score was maybe 15th out of 33 or so pilots, but it was a great improvement from the previous contest, and as I made the trip back to Virginia I felt like I really might belong in Expert, and that the trials and tribulations of many years of Advanced contests were but a distant memory from a past life.

To this day, Tommy's kind words, delivered with his impeccable timing, remain among my favorite accomplishments in Stunt. Thanks Tommy! Sometimes you don't have to coach a person to death to bring them along; just a word or two of encouragement can go a very long way.

As an epilogue to this story, in May, 2009, at the same Huntersville contest in which I first entered Expert, I was lucky enough to score my first victory in Expert. As I made that long drive back to Virginia, I decided it was time to give Tommy a call and share the great news. Even over the phone I could see the smile across Tommy's face as he offered his congratulations, and then he asked me if I remembered who launched for me that first Expert flight so long before. Hell yeah I remembered!

It felt great to reminisce about that first foray into Expert, and to be able to show Tommy that his faith in my abilities was not totally misplaced! Tommy taught me not only a lot about trimming and motor runs in just a few phone calls, but also that sometimes it is what you do as a person that can make a big difference in another fellow's Stunt career and how they feel about the hobby. SN

There are a couple of guys flying Advanced around these parts who are pretty good these days, and they are good people as well. I hope I'm at the contest the day they move up to Expert, and have the privilege of passing on Tommy's gesture to some new faces.

Just after my writing that Tommy Luper had been semi retired from Stunt, he made a triumphant comeback to the contest trail, placing first in Expert with this brand new airplane at the October 2009 Huntersville contest. Congrats on a great job Tommy!

Alabama, Florida, Georgia, Mississippi, Puerto Rico, South Carolina, Tennessee

District V

By Guest Columnist Rafael Irizarry

For this Special Issue of *Stunt News,* Dale Barry has asked fellow District V member, Rafael Irizarry, to write a bit about his club, the Puerto Rico Prop Busters.

For the Puerto Rico Prop Busters, *it's all about having fun!*

"One, two, three, four, five ... darn, there's no breeze ... well, it's still early ... 10, 11, 12 ... I wonder what Ted would think of this 63-ounce, take-apart Trivial Pursuit ... 18, 19, 20 ... will Alberto bring his new plane today? ... 24, 25, 26 steps ... 65 feet! This Kaz Minato handle is so light! I just hate getting these new lines wet in the grass. Hey, there's Alex! I can smell the coffee from here, just let me get this last clip on ... good weather, good friends and a PA 61 on a pipe ... life is good."

It's early Sunday morning at the Roberto Clemente Sports City, home of the Puerto Rico Prop Busters' flying field, the only AMA sanctioned facility for CL model activities in Puerto Rico. Located at the Sports Complex managed by the late baseball star's family, it is just a five-minute drive from the San Juan International Airport. With a 180-foot-diameter flying circle mowed to putting-green standards, it's almost like taking off and landing on the L-

Family portrait: (standing L to R) Alberto Haber, club VP Cacho Parodi, yours truly, club president José Parodi, Pichín Hernández, Mickey Fuentes, Angelo Figueroa, Julito Burger, Maneco Becerril, and Julio Trigo; (kneeling L to R) Javier Parodi, Mancha, and Gustavo Irizarry.

Pad tarmac. Beyond that, the grass is just about two inches high. If your engine quits while inverted you'd wish you'll be flying here!

The Puerto Rico Prop Busters (PRPB) Control Line club was founded in 1997 with the merging of two small groups of Control Line enthusiasts. That same year the club was formally registered as a non-profit corporation under the name of Puerto Rico Model Aircraft Control-line Association, Inc. The Puerto Rico Prop Busters succeeded in getting old timers and younger generations together to become the only active Control Line club in the island. In 1998 the club negotiated its actual flying site. Since then, the excellent grassy area, large enough for four circles has been the club's center of operation for all CL flying, including contests. As an AMA District V chartered club and having amongst its membership two qualified contest directors, the Puerto Rico Prop Busters hold sanctioned contests and other flying and social activities. The club's mainstream interest leans toward Precision Aerobatics, but there are also Racing, Combat, and plain sport flying enthusiasts.

Cacho "The Grillinator" Parodi at work! Those "Bubba Burgers" are just fantastic. Julito (L) tops them with some cheese.

Our presence at the flying field on weekends is almost like a sacred ritual, regardless of the windy conditions which generally prevail over the island, flying is very rarely canceled. In Puerto Rico, generally after 9:00 in the morning, a 10-15 knot breeze from the east can be expected due to the trade winds pattern.

The core of the PRPB Precision Aerobatics enthusiasts is a very dedicated and highly motivated team which aims at competing at the AMA Control Line Nationals every year. Our own Germánico (Alex) Becerril won the 2008 Nats Advanced Precision Aerobatics Championship. Also, fellow club member Alberto Haber has finished consistently in the top five, moving along with Alex to the Open Class category.

In 2006 and 2007, the Puerto Rico Prop Busters club was awarded Gold AMA Leader Club status. In recognition for the new status, the club received a plaque from the AMA acknowledging the club's contributions to the community and to the aeromodeling sport.

2008 Nats Precision Aerobatics Advanced Champion, Germánico (Alex) Becerril poses with trophy and first-place plaque along with Yurii Yatsenko-designed Akrobat, powered by a muffled PA 61RE.

Partial view of main circle. In the background, our checkerboard-clad storage shack/observation post/windsock tower. Oh, and there's Alberto in the inside loops with his Nats veteran Yurii Yatsenko's Akrobat.

The author lectures on basic aerodynamic principles governing CL flight to a group of eager young students in a PRPB-sponsored seminar and workshop. (CL-1; Playstation-0.)

Wendy gives daddy (club prez José Parodi) a Happy Father's Day kiss.

"Raindrops are falling on their heads ..." How many modelers do you need to start an engine? Rain can't stop the good time at the PRPB flying field.

Our club's most prized possession: the lawn tractor. It makes it easy to enjoy keeping our flying field in top-notch condition. No, I won't let you drive it.

One particularly enjoyable activity is the club-sponsored building and flying seminars, like the one recently held for a local church youth club in the metro area of San Juan: a Control Line modeling introductory course which included theory, building and flying of a Sig ½A Skyray. The seminar held at their church's clubhouse lasted about three weekends with about 20 young club members and their parents that included a couple of full-scale pilots. After the models were finished we met at the flying site to learn to fly. Helping kids

with their first CL model airplane is always a rewarding experience. Someone did it for you, remember? Teaching is sharing. Who knows, they might be the future Puerto Rico Prop Busters!

Just as enjoyable is the year-round building/flying season with 82ºF average temperatures. There's always something new on the flying circle! Whether an ARF, a profile, or a full-blown Precision Aerobatics stunter, everybody gets a chance to either practice the pattern or simply do a couple of loops with some inverted flying. The whole idea is to have fun!

Among our distinguished visitors and friends, legendary model airplane designer Dee Rice traveled from Houston, Texas, and spent a few days flying and sharing his modeling wisdom with us. Many of you will remember Arliss Powell, of Tucson Cholla Choppers fame and longtime friend of our club president's family. We cherish fond memories of her visits to Puerto Rico and to our flying field. She really enjoys the smell of castor oil in the early morning breeze as we all do. Speaking of club presidents, there's always somebody behind a well-organized group of people and the Puerto Rico Prop Busters feel honored to have such an individual as a leader and promoter of our fine hobby/sport. Col. José Parodi (USAF ret.) has served not only as an inspiration but as an example of dedication to his country and family, fostering the values of good citizenship and leadership among all club members and friends. Col. Parodi flew the F-86, B-47, and A-7, and has 1500+ hours in the F-104 in which he also served as instructor. He retired from the Puerto Rico ANG just when the F-104s were being replaced by the much awaited F-16 Fighting Falcon.

Our famous cookouts and Christmas gatherings should be reason enough to plan for Puerto Rico as your next vacation destination. Just drop us a line and let us know! And no, you don't need a passport; you'll be traveling to US territory. Brush up your Spanish language skills; it always helps, although we speak fluent Stunt!

I'd like to thanks our PAMPA District V Director Dale Barry and *Stunt News* editor, Bob Hunt for letting us share our story with you all. After all, they're guys who know that fun is spelled S-*T*-*U*-*N*-*T*! See you at the field! SN

Rafael U. Irizarry
Field Marshall
Puerto Rico Prop Busters
usaf61@hotmail.com.

Perfect pitch … "You dial in this things by ear, buddy. You don't ever use a tach. Just let it speak to you." Alex dials in the Randy Smith-tuned Thunder Tiger 36 on Cacho's Sig Banshee.

Another partial view of our flying field. Tito Valentín puts his highly modified Sig Twister through its paces.

Illinois, Indiana, Kentucky, Missouri

District VI

By Allen Brickhaus

Flying Friends and Traveling Duos

The thought of mass convergence of pilots to a contest brings forth a warm fuzzy feeling. You always have the need to do your own personal best, each and every flight, in front of judges at each and every location. But the journey to that event may have begun with a pair of friends who build and fly together on a daily or weekly basis. These two probably have often conferred on what to build, what engine should power the model of choice, and how to finish the plane to suit the aesthetic values of each individual's mind-set.

A pair of friends can mentally build a plan of attack as to how to prepare for any given contest. This goes beyond the building and finishing time discussions. Calls go out to each other about when is the next time to fly. Talk centers on how to improve their flights from the last contest and set a goal for bettering their own personal best. They must figure out a way of critiquing each other without harming each other's feelings. Do they critique each other by verbal comments following each flight, or by using some accepted printed critique sheet, and using red marks to show where mistakes have been made in the pattern?

Mistakes could have been made, by not having a model in-trim, and the out-of-trim model has to be flown in a non-

conformance manner in order to make the plane do what the pilot desires. Helping to trim each other's model is also an important amount of time together. Are the wings level? Does the model hunt? Does it make "funny" moves when accomplishing a portion of each maneuver? Does the engine run smooth? Is it equally powerful during the entire part of the flight? These are only a few of the questions which can be solved during the time together of the two pilots. I have only skimmed the surface of what each flying friend can help to do for his modeling buddy at the home field, or at the practice sessions prior to a contest time.

Depicted here are two long-term friends in the way of Lew McFarland and Charlie Reeves. They got to know each other while Charlie was studying at the University of Kentucky and Lew was a pharmacist in town. They are shown with their Humblers.

They can plan together the trips they desire to make during the contest season. They sit down with their calendars and make decisions as to which contests they feel are important to them, which ones they can get off work for, and mark the calendars for each individual trip. Can they afford to eat out at every meal, or do they need to bring a cooler or two to hold sustain their daily eating schedule? Can they afford the hotels in the area, or do they need to bring a tent to provide shelter from the heat of the day and have a place to rest the weary soul during the evening hours?

Each can handle different jobs. One can provide the needed vehicle, and another makes the hotel reservations. One might have a cooler, while the other might have the Garmin or Tom-Tom to make the transition from home to the site, and then back home more efficient. One might have a sun awning to help hide from the sun and rain of a contest day. The other might have a pair of comfortable chairs to sit in during the day and evening. They just need to make a list of needs and resolve the quest with items from their homes.

The pair becomes closer friends during the driving time. Discussions of models are not always the center of focus on long trips, but they can be. Many of the thoughts we have already talked about can be bantered about in the cabin of their van, truck, or auto. Giving each other driving breaks help to maintain the safety of the trip and allows each pilot to be more refreshed when they finally get to the contest.

Tom Luper of Winston-Salem, North Carolina, and Charlie Reeves traveled to the VSC. This was Tommy's only trip to the VSC, but both have long stories to tell of their adventures to and from Tucson.

I know that my solo trips involve some sleep stops. For safety reasons, I choose to stop at a fast-food restaurant and find a location in the parking lot which has some shade, is not in the way of customer traffic, and is in site of many drivers. I park the vehicle, lock it, keep the engine running and maintain a comfortable temperature.

Bob Whitely took the long way home from Tucson, Arizona, via Stuart, Florida, to Carmichaels, Pennsylvania, and the return pathway with Roy Trantham.

A doctor once recommended doing this in a reference to safer driving. You need to fall asleep and allow your body to re-awake later. Normally I sleep about 12 to 18 minutes and this "power-nap" helps me get back on the road again. I try to avoid Interstate rest stops, as you might wake up with no one around you, or unsavory characters surrounding you. You might not have many choices after the normal restaurant hours though. Therefore, having a traveling friend makes the journey more interesting, safer, and more exciting.

No better buddies than to have a father-and-son team from the Memphis, Tennessee, area. Paul and Ryan Taylor keep the family going with trips to various modeling ventures.

Once you are at the contest, you each have your own pit crew available for your use. This is a help to both of you. Discussions during the between-flight times, and advice as you both bring the particular model to the circle for the judged flight is a help. Verbal help to resolve pattern problems is a great assistance to the flier. Pumping up your friend when his pattern was not what he wanted, or cheering him along further when his pattern was exceptional and worthy of praise is the job of a flying friend. Being a cheerleader at the awards time, makes the friendship bond even better.

Now you have the long drive home, and a need for sharing of sleeping and driving times. You both need to discuss the successes of the contest and the goals for improving your performances for next time.

This duo hardly ever separates as they have such a great time on the contest trail. Michael Schmitt and Dennis Vander Kuur travel hours together with ease, humility, and grace. This is a welcome duo to any contest.

This is a never-ending battle for truth, justice, and the modeling way. I would be remiss without naming some of my partners, to include my wife Kathy, Charlie Reeves, Jerry Norin, Gary Hajek, Marshall Busby, Tom Hampshire, Jim Renkar, Steve Moore, Bill Marvel, Don Gerber, Roy Trantham, Chuck Feldman, and those soon to be named. Charlie Reeves has traveled to the VSC with Tommy Luper, Lew McFarland, and Joe Reinhard. Roy Trantham has made journeys with Chuck Feldman, Don Gerber, Bob Whitely, and Keith Trostle.

I know of friends who travel together all the time. You can think of the multitude of friend combinations and the list would be endless. Finding a modeling friend makes the entire hobby time friendlier and more enjoyable. You will have both up and down times during your trips. Use your judgment to allow those highlights and dark times to improve your friendship. The value of a good friend is undeniably a boost in your personal and modeling life.

Find 'em, make 'em, and keep 'em. SN

District VII

Iowa, Michigan, Minnesota, Wisconsin

By Crist Rigotti

I thought it would be great to have a short history of the Control Line clubs in our district for this special issue. Here are the stories of the two that responded.

Minneapolis Piston Poppers, Inc.

During the winter of 1959-60, noted Navy Carrier flier Jim Sinton got a group of CL fliers living in the western suburbs of the Twin Cities together and formed a new club. Thanks to a friend, I got a lift to the first official meeting a month later, being only 15 and too young to drive yet. Jim was interested both in promoting the hobby and in promoting competition, including providing the first Twin Cities Navy Carrier competition (with our own deck!). A club newsletter called *Prop Wash* was also begun soon after the club began.

The club quickly grew to several dozen members with a large portion of young fliers, and very interesting meetings, as the more experienced shared their skills with various demonstrations and films. Although the treasury was small in those years, the club quickly began holding AA and AAA contests.

Entry fees and pop and hot dog sales always seemed to cover the costs, but I still wonder if the Dads didn't quietly dig into their own pockets a few times. Back then there were lots more CL fliers in the area and we often saw several large contests in the Twin Cities, including the Piston Poppers' 10,000 Lakes Championships. Contestant counts way north of 50 were also common.

The club grew steadily to a peak of about 70 members with the demise of the other area CL clubs. Over the years, contest attendance steadily shrank until the club dropped its contests a few years ago. Still, Kids Kontests have introduced many youngsters to what we do over the years, although little has come of them on a long-term basis. Also, the January 1 Frozen Fun Fly, now in roughly its 15th year, generally attracts almost all the club members whether it's 35 above or 10 below. On the colder days it seems like a few cooperative planes get much of the airtime on a sharing basis.

Membership today runs in the thirties, and your author has the claim as the only *active* member today to have been an original member. Like many older clubs, when we asked for a show of hands of all the ex-presidents, they outnumbered the others in attendance. Each winter we have a great social get together at one of the member's homes (actually, Keith and Sharon Sandberg's home so far), and it will be very special this year to be able to celebrate the club's 50th birthday.

—*Jeff Welliver*

The flightline at the Minneapolis Piston Poppers circle. Welliver photo.

A Kids Kontest at Minneapolis. Welliver photo.

A News Year's Fun-Fly up north! Welliver photo.

A club building session. Welliver photo.

Broome Park Circle Burners

According to Dan Miles, there was a group in the Flint, Michigan, area known as the Balsa Termites that had a formal club setup, but outside of this I do not know what types of flying they did or how big the club ever was. My introduction to the site that the Broome Park Circle Burners fly at today came about 25 years ago.

From the name of the club you can probably guess that we fly at Broome Park which is located in Flint, Michigan. The park has a single paved circle with two additional grass circles to either side. I have been told by some of the older guys in the area that there was quite a bit of activity at that location back in the 1960s (a little before my time) and there is even a pylon post still sunk in one of the grass circles for speed airplanes.

The City of Flint maintains the

general area of the flying field as part of the park, but we get out there with mowers and weed killer to keep things in good flying shape. This year we started to meet up out there on Thursdays to fly which is a change from our past habit of calling up a day ahead with plans for flying. Generally the field maintenance takes place and then the flying. I think that it has worked out well with plenty of fuel getting burned.

The Broome Park Circle Burners was actually the brainchild of Frank Carlisle. He thought that since we had a leg in the Tour d'Michigan (TDM) that we should have a name so it could be placed on the flyers and the trophies. Currently we have Dan Miles, Jay Williams, Jim Morway, Mike Paris, George Marsh, me, and occasionally Frank Carlisle out flying during the summer. We have a meeting for about 5 minutes when a good number of us are together where we generally dub Jim the president, but never tell him.

Grace Paris and an unidentified flyer at Broome Park.

Rich Kacmarsky holds his Musciano entry at Broome Park.

As you can probably guess, there is not much structure to the club, we are more just a bunch of guys who like to fly and get together at a common location to do so. There are no restrictions for noise so just about any flavor of airplane can be flown out there which seems to appeal to some of the people who come out.

Sean McEntee puts in a flight!

The flightline at Broome Park.

During the last couple of years we have hosted a number of events at the park. The most regular for the last 2 years has been the TDM in July and the John Kilsdonk Memorial Fly in September. Paul Smith was running some events a few years ago and I have put on a Stunt clinic and a Spring Tune Up contest in past as well.

We also use Broome Park for the annual Event for the Insane that is held on New Year's Day. By that time of year it is questionable if we can make it out the circle, but we have found that the baseball parking lot is generally free of vehicles and get our flights in from there. One thing that we usually do at the end of the regular events is get together at a Chinese Buffet called Hong Kong Buffet (HKB) which is conveniently located near the LHS-Rider's Hobby Shop. I think that some of the guys look more forward to that part of the gathering than the actual flying events, especially on New Year's Day.

—John Paris

The photos were submitted by John Paris. SN

A great get together of the Broome Park Flyers. Looks like a New Year's fly-in!

John Paris and Frank Carlisle prep a Flite Streak during a New Year's fun-fly.

The circle at Broome Park.

Arkansas, Louisiana, New Mexico, Oklahoma, Texas

District VIII

By Don Hutchinson

Since this is not the normal *Stunt News* issue, I am going to approach it a little differently than I would the normal bimonthly publication and concentrate on one very well known Stunt airplane: the ubiquitous Ringmaster.

I would venture to guess that the Ringmaster has spawned more serious stunt fliers than any other model ever designed. While I was more of a Veco Tomahawk guy back in the 1950s (J.C. Yates and Bob Palmer were my teenage heroes), a whole lot of Rings always seemed to show up on the flying field. The Ringmaster was (and still is) a great sport-flying model design, but it also took its turn in the competition arena.

Our little Minnesota group took several to the Plymouth Internationals in Detroit back in 1953 and we had some good success with them, placing first and second in Combat! Yeah, it was a whole lot different back then. The dedicated killer Combat models hadn't been invented yet. Our usual choice for a power plant for the Ringmaster was the Torpedo .29 or the Veco .35.

I think most of our Ringmasters were built without landing gear as well; just toss and go! Somehow the Fox .35 never was very popular up in the far North. I don't recall ever seeing one in a Ringmaster. It was quite a bargain for the measly few dollars the kits cost back then. One could get the engine, the airplane and a quart of Powermist fuel for less than fifteen bucks!

That was 50-plus years ago. Recently, there has been a tremendous resurgence in the popularity of the Ringmaster down here in Texas to the point that Dee Rice has spearheaded the formation of a dedicated special interest group known as "The Brotherhood of the Ring." All Ringmasters, any size or version are looked upon with great favor among this group, even a 576-square-inch version with flaps that is a killer Stunt ship in capable hands. This of course has resulted in the creation of the annual "Ringmaster Roundup" competition down here in Texas. This event is more of a weekend social "My Ringmaster is cooler than yours" gathering than a serious flying competition. Fliers come from near and far to partake of the fun; quite a diversion from the serious stunt competitions. To give you a flavor of what it's all about, I have included Dee's write up of the last "Roundup."

For more information on the Brotherhood, do a Web search for "Brotherhood of the Ring."

2009 Ringmaster Roundup and the Texas State Stunt Championships

What? Us worry about the Swine Flu? Not to this group of U-control groupies. This year's Ringmaster Roundup was moved to the Memorial Day weekend and right into the middle of the United States' mediafest on the Swine Flu "epidemic." That did not cause a bit of concern to the Brothers of the Ring, because we simply took up the gracious invitation from Richard and Edie Oliver, now honorary Brother and Sister of the Ring, to come and have our flying festivities at their beautiful country flying paradise.

Located about 60 miles north of Houston, Richard and Edie spent three years building a beautiful country home and at the same time, carved out three gorgeous grass flying circles right near the house and model barn.

Flying festivities began on Thursday, May 21, when modelers for the Ringmaster Roundup and the Texas State Stunt Championships, which was to be held concurrently on Sunday, began trickling in to the site. Practice flying and fun flying began even as Richard was still running his tractor around finishing up a final short grass mowing, and praying it would last through the weekend.

Friday brought out David Strawn, his dad Bill, and others for last minute non-toxic paint marking of the circles and pit areas. Dee Rice was setting up tables, shade awnings, and unloading tons of prizes into Richard's barn. Richard gathered up a bunch of the Brothers and with their help did a last-minute clean-up of some piles of rock and Dale McCord grabbed a weed eater and touched up a missed area. By noon everything was in

Dee Rice and Dale Gleason pose with the great flying Ringmaster 576.

The family that flies Ringmasters together has more fun!

There were plenty of prizes for all the contestants!

order and all three circles were under way and David Strawn had the first official event, balloon bust, underway.

David's dad, Bill, had not flow in over 50 years, but had his modified Ringmaster ready to go. With David's help he was flying again and dizzy as heck. Bill yelled that he was having trouble and needed help. David ran out and grabbed the handle as Bill did a reverse one point landing. Ouch! Well, that didn't last long as Bill was soon flying again and with no more motion issues, spent the next two days grinning from ear to ear.

David Gresens, the CD for the Roundup and the Texas State Stunt Championships, got things rolling at 8:45 on Saturday morning with his initial pilots' meeting. He explained that AMA Pattern and OTS would be run concurrently on two adjacent circles with the third circle designated for practice. He also explained that there would be no particular flying order, just whenever you get ready, but keep things rolling. Believe it or not, that works exceedingly well and makes for a more relaxing experience.

Roger Olson borrowed Frank McMillan's Ringmaster and scored very well!

Jose and Juan Vargas, from Houston, flew in their third Ringmaster Roundup.

The Ringmaster Roundup is limited to the one and only S-1 Ringmaster design, although close look-alikes have a place at the Roundup too. Ringmaster derivatives can fly in Balloon Bust and compete in a "Non S-1 pilot's choice event.

Joe and Colleen Gilbert (Flash and Dash) always make a strong team at any contest, but at the last two Roundups, Joe won the highest flying award, in both 2007 and 2008, and was back-to-back Master of the Ring. In the Roundup, points are given for placing in each event. Well, Joe swept the Saturday events by winning both OTS and AMA Pattern Stunt. That put Joe in the cat bird's seat for a three-peat for 2009 Master of the Ring! Only a dismal

Steve Holt came from Tucson to join in the celebration.

John Cralley brought his electric Ringmaster to the Roundup.

showing in the Sunday's Team Stunt event would stop Joe this year.

Gregg Elling won second which pushed his brother, Gaylord, to third in OTS, and Darrel Harvin grabbed fourth.

AMA Pattern was broken into skill levels. Expert was won by Joe Gilbert, followed by Darrell Harvin and Dale Gleason. Gaylord Elling took Advanced over Mike Greb and Roger Olsen. In Intermediate it was Jose Vargas followed by Gregg Elling, and in Beginner it was Scott Hartford then Perry Rose.

One of the fun milestones of the Roundup is the choosing of the teams for Sunday. The top Expert pilots take turns choosing until the four-person teams are complete. Each entrant is on a team and contributes in an important way. Sometimes one or two of the pilots may be required to serve on two teams, but the teams are adjusted to be as balanced as possible.

Richard State shows off his Batmaster!

The Roundup Team Stunt captains this year were Darrell Harvin (The Four-Foot Bottoms, FFB), Gaylord Elling (The Kania's Hobbits, KH), Joe Gilbert (The Rings of Fire, RF), and Dale Gleason (Kania's Kangaroos, KK).

In Team Stunt, each member of the team flies one event on Sunday. The teams decide which flier will fly what event. The events are: 1) Old Time Stunt; 2) AMA Pattern Stunt; 3) The Unknown Stunt Pattern; and 4) Team Pursuit and points toward the overall Champion Team are accumulated with each event.

The Unknown Pattern is fun to watch, because neither the judges nor the fliers have ever seen some of the maneuvers, which may include an overhead four leaf clover, vertical square eights, point-down triangles, and maybe even a square four leaf clover. It is rare for a pilot to get in a clean pattern … especially with all the laughing spectators and semi-confused judges.

The final and most fun event is the Team Pursuit. The least experienced pilot flies the drone plane with a streamer and one of the more experienced pilots flies the pursuit plane, also with a streamer. The drone flies level and the pursuit ship makes scoring passes, cutting off bits of

the streamer. If the streamer on the drone gets too short, the pursuit plane may then make scoring passes by flying in front of the drone, hence cutting off bits of the pursuit plane's streamer. The scoring is 50 points per cut for the first eight cuts, then 25 points per cut for the next 6 cuts. A score of 550 is the maximum any one team can get.

Going into the Team Pursuit, the Rings of Fire led at 1422.4, second was Four Foot (Feet?) Bottoms at 1419.3, third was Kania's Kangaroos at 1415.7 and fourth was Kanias Hobbits with 1399.1. It was anyone's game at this point.

When all the balsa dust settled Kania's Hobbits made a "Mine That Bird" charge from last to first, and with a final score of 1699.1, and blew away Kania's Kangaroos at 1565.7, Rings of Fire with 1522.4, and the Four Foot Bottoms at 1419.3.

The final tally gave Joe Gilbert a three-peat of "Master of the Ring." Scott Hartford won Pilots' Choice for S-1 Ringmasters, and it was well earned. His ships are unique and beautiful with painted multicolored sub structure and clear covered, to give a distinct, clean and colorful appearance.

Bill Gruby, the past winner of the Pilots' Choice award for Special Edition and John McCollum teamed up and drove straight through from Connecticut to Texas in a 33-hour marathon. It was worth it though as Bill repeated his Pilots' Choice win for non S-1 Ringmasters, with his giant 1,600-square inch Super Ringmaster. His Super Ringmaster scale-up beat out his travel buddy, John McCollum's twin Mustang look-a-like S-1 Ringmaster.

The Texas State Stunt Championship on Sunday was also a big success, with lots of the Roundup entrants flying in this event, too. In fact Juan Vargas won the Beginner event with his Ringmaster and is now a state champ! Brother Greg Elling also won the Intermediate Stunt with Joe Hildreath placing second and Brother Jose Vargas third. Advanced was won by Mike Greb, followed by Roger Olson, Gaylord Elling, Steve Hollier, and David Russum.

The Expert division was a very competitive event, with Tom Farmer in fourth, Dale Gleason in third, Bill Wilson in second, and the new Texas State Stunt Champ in Expert, from El Dorado, Arkansas, is Joe Bowman. Joe, a professional pilot when he's not flying models, won with his fabulous new Dreadnought! Joe is going to be hard to beat with his new ship. Congratulations to Joe Gilbert and Joe Bowman. The *Joes* have it for this year.

Also, thanks to all the volunteer help, because it took many nice folks to help make it such a success. A special thanks to David Russum for all the nice photos, especially because he had to spend a good part of one day rebuilding his dinged Stunt ship.

Everyone really enjoyed the country setting for the events and huge kudos go to the hosts, Richard and Edie Oliver. SN

—Dee Rice

Joe Gilbert won the title of "Master of the Ring" with superb flying.

Team Pursuit was a big hit with all the Brothers of the Ring.

District IX

Colorado, Kansas, Nebraska, North Dakota, South Dakota, Wyoming

By Carl Shoup

I received this note and photos from Keith McMahan that he took at the Rocky Mountain Controline Championships Labor Day weekend. SN

—Carl

Saturday morning's lineup.

The Sunday morning lineup.

Norm Whittle's Sultan.

Keith McMahan's Gladiator.

Jerry Higgins' Jamison.

Russ helping Debbie fly.

Chris Brainard's Caprice.

Russ Gritzo and his wife, Debbie, after he helped her fly his Pathfinder ARF.

Driving to contest Sunday morning.

District X

By Dave Fitzgerald

Arizona, California, Guam, Hawaii, Nevada, Utah

Welcome to the Special Issue. I'm sure Bob Hunt has also done his welcome, but this is to make up for the missed issue earlier in the year. When you have unpaid volunteers, sometimes things spin out of control. Transitions to the new publishing team, broken arms, and mail-delivery problems are just a few items we have been continually working on within the EC.

I think we are in the home stretch now, but by putting out this Special Issue, it's going to put a lot of burden on Bob and Liz to not only get out the November/December issue and this one, but the January/February issue as well. Time will be compressed. I don't think anyone of us can really adequately thank Bob and Liz enough for the help and dedication they've shown to stick with it and get the job done. Bob and Liz, thank you from District X.

Bill Rich also has had some issues he has been staying on top of. Many comments from our membership on many topics: the new method of scoring and penalty for not completing the pattern correctly, new pull-test requirements, the new Nostalgia 30 event, Team Trials, volunteering to run the Nats after Paul Walker has his run, publishing issues, bylaws changes, late ballots, late mail, cost control and the PAMPA budget working with Dave Gardner, new dues structure, and PAMPA elections. Just to name a few, thanks Bill for everything you and Brett have done. I don't really need to mention how much Dave Gardner has done for us the last two years, his contribution has been huge. Thanks Dave.

Since this is a special issue, Bob has graciously granted space in this issue for a little piece that Brett Buck and I have collaborated on about how to set up tuned-pipe engines. Please keep in mind, this is a bit general, and in some cases will generate quite a bit of discussion as to how to do this.

Many newcomers can be very intimidated by pipes. As we say in the article, pipes really are not any more complicated than a muffled engine. Hopefully we can make this a little less of a mystery. And please, if you have a differing opinion, and there will be some, e-mail me or call. We can have a discussion that I can include here as updates or a continuing discussion about pipes. This could give me stuff to write about well into next year. Also, send me your setups, I'd be interested in adding more data points.

Kid update: The boys' football season is done. Michael, age 9, was starting running back and starting corner on defense. He probably averaged two touchdowns a game and something over 125 yards per game. He and I both had a lot of fun. He's decided he likes tackling and making hard hits.

Eric, age 11, was starting left offensive guard, starting middle line backer. Both boys played pretty much every down the entire game, both sides of the ball. Eric loves defense too and averaged about two sacks per game. When Eric, the tank, chases down the quarterback it's quite the sight. Eric also was converted to a short yardage running back. If you need two yards, he'll get you three-four. If you need five yards, he'll move the pile and get you three-four. You might say he runs north and south.

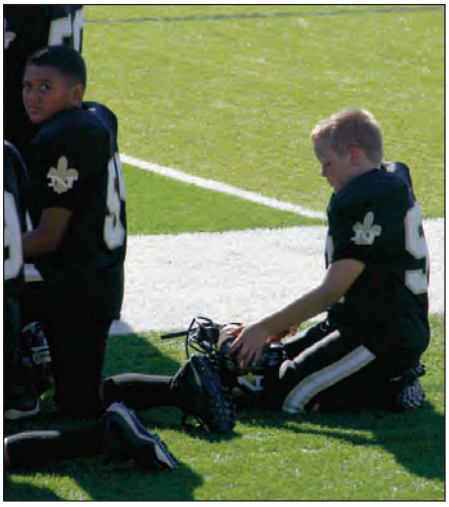
Rachael's cheerleader season is not over. Her team will continue to compete into the year. They qualified for and plan on attending the Nationals in Las Vegas next February. I guess I'm going to be

busy with more than building a plane. Jim Aron got to attend a game and has some fun too.

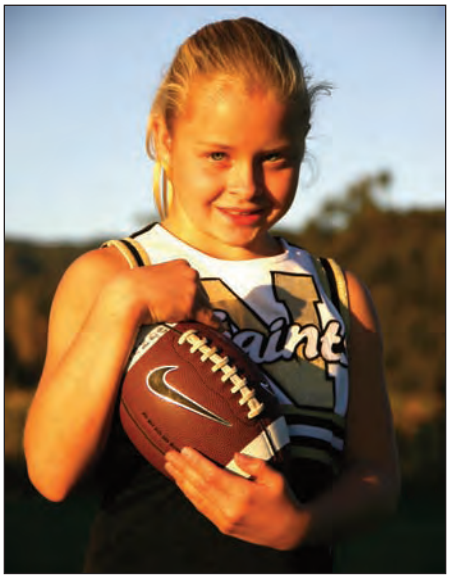
Ok, some rather self-serving kid pictures here. I have a bunch of Golden State pictures, but Jim Aron will be using many for his report next issue, and Rickii Pyatt is the only one sending me pictures. So if you want airplane pictures instead of kid football pictures, send me pictures of District X stuff!

Eric and Rachael on a foggy football morning.

Michael running hard for the hole. This was a 40-yard run, just missed a touchdown.



Eric in contemplation after a hard loss. Eric had five sacks that day.



Rachael ... what can I say? Cute and gorgeous.

Rachael, the business side, very serious game face.

Eric in action, well in the back yard anyway.

Michael ready to hit someone.

Major epiphany category: Jim Aron and I had a flying session toward the end of September and invited Eliott Scott to join us. Eliott has been a beginner on the verge of intermediate flying for quite a while. He doesn't live too far from the Napa field so we thought it a neighborly thing to do. Anyway, Eliott has had a block and hasn't been able to do the reverse wingover, ever. Regular wingovers, inverted flight, no problem, reverse wingover—crash every time. Jim thought that it might not be a problem of capability, but how he was standing and setting up for the maneuver.

Sure enough, Jim had him chair-fly a wingover for us, and his stance was backwards. There was no physical way he could turn inverted, and fly behind his back for the inverted pullout and subsequent climb portion of the reverse. Well, this took several dry runs and more chair flying before Eliott was comfortable enough to give it a try. This is one smart guy. He tried several regular wingovers with the new stance before he went with the reverse. Success on the first try! He ended up doing about three reverse wingovers on that flight, and more as the day went on. It's a gratifying feeling to see major progress and honest jubilation when something goes right. Congratulations Eliott!

Over the last eight months, the Speed/Racing guys here in Napa and I have been working with the county parks department of Napa to get the asphalt circle sealed. We collected money and contracted with the county's paving contractor and were finally able to seal the circle near the end of

October. The contractor also repainted the stripes. It looks great. Hopefully, the circle will last a very long time. Come out and fly with us if you find yourself in Northern California.

Golden State is also done and with it our competition season. You see you East Coast guys, our flying season is only limited by how much fuel or electrons we want to buy. Unfortunately, Bob doesn't have room in the Special Issue for Jim Aron's contest results, so expect some snappy prose from Jim in the January/February issue. This was Jim's first go at running Golden State, he regularly runs our local contests but the first time here and at a new site. He did a marvelous job. Thanks Jimby. (Other people helped too.)

As I mentioned in my last column, we presented Arlie Preszler with the Barton Sportsman of the Year award. We went to Arlie's house and had a great visit and rehash of old times. There is a special article with pictures covering that, courtesy of Cleon Lingwood. Cleon did the heavy lifting in organizing the event; and it was great to see Arlie and Margie again.

I only had one real hiccup on my way to work after the lunch. The highway I chose to drive to the airport has a good-size drawbridge over the Sacramento River. It's is large enough for large container ships and oil tankers to steam all the way to Sacramento from the ocean and the bay. Well, the bridge was stuck up, broken.

By the time I got to it, the backup was only one mile and growing by the minute. Not good if the people going from SFO to Kona wanted to be on time. It just so happened that Phil and Kathleen Granderson were also on their way home, by a different route with a GPS in their Honda Odyssey.

I was in my '74 Capri going as fast as traffic would allow, legally of course, also talking on my hands free phone device, as required by California law, all while trying to see how far I would have to back track to get to an alternate highway to the airport. The 2.8L V-6 runs pretty smooth at 4,000 cruise RPM. Phil came to my rescue, thanks Phil and Kathleen. I whizzed by, flashing my headlights, and waving, at a legal speed of course. I made the departure time, no problem with one minute to spare.

Till next time, have fun. Sincerely, Dave Fitzgerald. SN

Rickii Pyatt and Mike Keville judging at the SW Regionals.

Ted Craver pull-testing at the SW Regionals.

Peter Deane with Uncle Jimby. Jim is wondering why he has no compression on his four-cycle after a valve adjustment.

Two generations of planes. Thunder Gazer in the background with my dad's Gieseke Nobler, built in 1975. I flew it in Classic with the original O.S. 35S. Ran great. The plane is now retired and hanging on the wall of our guest room.

L-R Ray Firkins, Phil Granderson, Paul Walker, Brett Buck. Pretty tough crowd. Yes the grass really was that short and not a gopher hole to be found. Outstanding facility, except for the seven-minute walk to the bathrooms. Plan ahead!

Jim Tichy with a Zealot in the background. Notice the fingers on Jim's right hand. This is before he had a disagreement with the carbon prop. The engine didn't really slow down much when it happened. This is only the PA 40 light.

The northern contingent at the banquet. L-R Paul Walker, Marilou Rush, Howard Rush, and administrator Jim Aron.

Paul Walker with a great deal of focus at the end of an official flight.

By Bruce Hunt

Why Do We Fly?

Why do we fly Control Line model airplanes? I'm sure there are as many reasons as there are modelers who fly. I have my own motivations that date back to when I saw my first Control Line Precision Aerobatics. Two things, both hard to define, made the strongest impression on my 13-year-old mind: beauty and grace. Here were models that looked like works of art, smoothly flying maneuvers I could only dream of flying with my 1/2A powered models. Only money, school, marriage, family, career and 37 years stood in the way of my dream.

Then at my 50th birthday my wife dug my surviving Fox 35-powered Magician out of the attic as a gift along with a new Fox, a Banshee kit, lines, fuel, and a flight box. I realized then that nothing stood in the way of living my dream of recreating the beauty and grace of precision aerobatics.

On my first visit to the flying field at Buder Park in the suburbs of St. Louis, Missouri, with my restored Magician, I was lucky to meet other Precision Aerobatics fliers. One of the first lessons I had on the road to living my dream was that other pilots are your best source of information, assistance, and encouragement. We do not live in a vacuum. Flying a perfect Aerobatic Pattern is a social event where we fly not just for ourselves but to challenge each other to do better. When we improve our skills, it encourages others to improve theirs.

On one of the first visits to Buder Park, I met my best friend from high school, Joe Thompson, who I hadn't seen for over 30 years. Joe and I had both shared the fun of flying Control Line models, and while I dropped out of the hobby Joe had kept up with the latest developments. Through Joe I connected with the local club, the Lafayette Esquadrille, joined the Precision Aerobatic Model Pilots Association, learned the PAMPA Beginner Pattern, and entered my first contest. At the St. Louis Ice-O-Lated contest in February, 1998, I came in third in PAMPA Beginner. I was hooked. Now if only I could get better at flying. How could I do that?

In preparation for writing this article, I brainstormed a lot of topics that could be included in a discussion on improving one's flying ability. I took these topics and grouped them by common themes. A theme covered by other pilots in what is available from many sources is what I categorize as the *mechanical* aspect of improving your flying, or how to trim your model to maximize its ability to fly well. I will repeat here what others have to say about trimming your model and share some of my own experience with the subject.

Another aspect of improving your flying is the *physical* dimension of body position, timing, movement and practice. When we move from the direct experience of flying, another theme is the *aesthetic and emotional* aspect of flying which includes presentation, flying with others, flying alone, and flying in front of judges. For me there is nothing like the adrenaline rush of being the center of attention for eight minutes in front judges. And lastly there is the *visual* aspect of improving your flying. How do we develop a critical eye that allows us to be our own judge and most importantly our own coach?

The Visual Aspect of Flying

In this article on flying I will concentrate on the visual aspect of improving your flying. To start, I will be referring to flying Precision Aerobatics or more specifically the sequence of 15 maneuvers known as "the pattern" that has been flown for the last 50-plus years. Judged on a scale of 10 to 40 points per maneuver there are 600 possible flying points available plus 20 points for appearance. Of the 620 points available only a few pilots today can score 560 points which means they are losing on average 5 points on every maneuver.

What are we looking for in these maneuvers? I will summarize the key visual aspects of each maneuver into three categories: *size, shape, and position*. These are the key attributes of the visual quality of a maneuver. Of the three attributes, I have found that shape is the attribute needing the most attention by fliers seeking to improve their Pattern scores. Position, which includes consistent bottoms and intersections, is a close second, with size, which defines the tops of maneuvers, is third.

Developing a critical eye for judging these attributes in your own pattern starts with closely watching others fly; both the best and the rest. My own experience is with video taping the flights of others. For the first six years of my own quest to improve my pattern, I recorded hundreds of hours of pattern flights and had my wife record many of my own.

Paul Walker flying in Arlington, July 19, 2003.

Bruce Hunt practicing the Pattern.

Reviewing these flights along with the judges score sheets can help develop an appreciation for the overall visual quality of maneuvers. If you don't have access to a video camera, you can

acquire tapes from other sources. Windy Urtnowski has tapes of 20 years of Nats and Team Trial competition. Bob Hunt has tapes from several Vintage Stunt Championships and Richard Oliver has tapes from the Nats and the 2004 World Championships. I also have tapes from a couple of the Northwest Regionals and three of the Vintage Stunt Championships.

The next important part of any attempt to improve your pattern is the use of a personal flight log. My own personal log books are small spiral bound books of a couple hundred 4 x 5-inch pages. So how does a log book help? The important thing to record is a log of each flight in a flying session. After each flight immediately record what worked well, what didn't and what you will work on during the next flight.

The important part of each flight review is identifying at least one thing to focus on in the next flight. If you don't go through this self examination, all you end up doing is practicing your mistakes. This is very important if you are flying alone when your log entries become a kind of self dialog. Here are some entries from my own log book:

5/9/2003 – Flying Impact/ cloudy day, 62 degrees, calm 10:15AM, 6 oz fuel, no needle change. Still needs lots of prime. 1st flight- 6:16 last few laps lean – cutoff loop, maneuvers smooth – Don't rush, pay attention to recovery and smooth turns. Don't jerk or over-fly – stay with model. 2nd flight- Engine run leaner at start but consistent throughout 7:43 flight 4.7 laps at end. – open 1/8 turn. 3rd flight – Better engine run 5.0 laps, more conscious of model in maneuver – developing awareness of overall shape and intersections. 4th flight – repeat of 3rd need to watch size of loops in vertical eight.

6/10/2003 – Flying Shark/ Sunny 76 to 78 degrees, light wind <3mph – Making trim adjustments. More nose weight, ¾ oz forward nose under engine. Raised tank to improve inverted engine run. Had to change out the glow plug at start. 2nd one this year? Last couple flights raised outboard flap a bit too even out wings in level and stop roll in outside corners, much better! Adjusted handle to move bar in and reduce line spacing; got rid of jerky turns and bobbles on corners. Good progress.

Over a five-year timeframe I now have close to a thousand flights logged. Mostly the comments in the log provide a record of the development of a critical eye for what works for me. The log documents the experiments with trim changes, engine runs, prop sizes, and the effect of changing conditions. And most importantly the log focuses on an evaluation of the shape, position and size of individual maneuvers. To be an effective tool the log should address at least one maneuver in the flight. At times I have focused on the maneuvers that judges scored lower than others. What aspects of those maneuvers are the weakest? What changes could I make to improve the scores on those maneuvers?

In addition to the size, shape, and position of maneuvers, another visual aspect has to do with the presentation of a maneuver. Presentation is paying attention to the entry into and the recovery from a maneuver. While the entry and recovery are not officially part of the maneuver, they are at least part of the unconscious evaluation the judge gives to the overall appearance of the flight.

Don McClave makes another smooth landing with his Tucker Special

What I try to create is a definite beginning to the maneuver and a smooth transition to level flight at the end of a maneuver. In round maneuvers the bottom is identified with a definite transition from level flight. The most common mistake is to enter the maneuver "softly" with a turn from level flight that gradually increases to the top of the loop. This leaves the bottom of the first loop offset from the beginning of the turn and behind it. The recovery also leaves the last impression on a judge just before your score is recorded. Leaving a maneuver at level flight height with no bounces or bobbles will add points to your score. In my experience the recovery from the two vertical maneuvers, the vertical eight and hourglass, indicate whether you are flying the model or the model is flying you.

A related visual issue to entry and recovery is the transition in the figure eight that occurs at the intersection between the inside and outside loops. In the best flown maneuvers this single point is marked by definite change of direction. When flown well there is no flat spot in the shape of the eight at its intersection instead there is a visible transition from turning inside to turning outside.

Speaking of turns, the corners of square and triangular maneuvers are also places to make smooth transitions in direction. This is a place where the quality of the corner is directly related to the quality of the model. In any case the best corners happen when they are not thought of as corners but turns between two directions of flight. That is to think about turning from level flight to vertical flight as the model turns. It is a transition not a single point. Focus on the flat sides and the overall shape not the corner. Fly the model through the corner.

The last topic I would like to cover is the use of background visual references to mark the position of maneuvers. As you begin your climb into the reverse wingover, start a loop, or make a transition at an intersection, be aware of something in the background that will mark that point. Having something exactly at the point of reference is not necessary as long as you identify and remember how far to the left or right of a background object your maneuver was. At times the background object is the sun. Is your intersection to the left or the right of the sun? Is your second intersection the same distance from the sun? To use background cues effectively, practice looking at the background and positioning your maneuvers to background cues.

Another way to use background references is to create a mental picture of the maneuver as if it was painted on the sky. While holding this mental image of the whole maneuver, fly around the outline. Instead of a whole image you can also picture key points in the maneuver and fly to these points. For example, picture the bottom location, the left side, the top and the right side of a loop and fly to these locations.

Practice, Practice, Practice

With this introduction to improving your flying, I have tried to give you some ways to improve your ability to critically judge the visual appearance of your flights. Using a personal flight log to identify areas of improvement and the effects of change will give each flight a purpose. Improving your flying requires that you develop an ability to recognize the correct shape, size and positions of your maneuvers. Watch others fly and practice, practice, practice. SN

Control Line Precision Aerobatics Hall of Fame

Precision Aerobatics Model Pilots Association-sponsored Award of Recognition for outstanding contributions to the event of Control Line Precision Aerobatics

2010 Call for Nominations

Criteria: The individual nominated shall have contributed significantly on a national and/or international level to Control Line Precision Aerobatics as a competitor, designer, administrator, author, promoter, technician, or manufacturer.

Eligibility: Any individual, regardless of membership in PAMPA, AMA or any other affiliated model aviation organization, may be nominated for consideration for the Control Line Precision Aerobatics Hall of Fame. Individuals nominated *may not* have competed in their country's National Championships or FAI F2B Team Trials, or the World Championships in Precision Aerobatics for a period of three (3) consecutive years prior to nomination; they *may* have competed in "Classic" or "Old Time" at their country's National Championships; they *may* have competed at the Vintage Stunt Championships. Individual shall not have been a PAMPA elected officer for a period of three (3) years prior to nomination.

Nomination: Nominations shall be open only during odd numbered years (with the exception of 2009-2010).

Procedure: Two PAMPA members in good standing (not from the same family) must nominate an individual or individuals. Nominators must request a Nomination Packet from the committee chairman. Packets contain questions on information vital to formulating a comprehensive biography on nominee. Nominations received in any other format will be returned.

Deadline: All nomination packets must be returned postmarked no later than January 31, 2010. Biographies of nominees will be published in *Stunt News* in the March/April or May/June issue.

Voting: The eligible voters will be listed in *Stunt News.* The eligible voters will then send their vote to the committee chairman via US mail or e-mail. A simple majority of votes is necessary for a nominee to be elected to the CLPA Hall of Fame.

Inductees: Will be announced in *Stunt News.*

Awards: A person inducted into the CLPA Hall of Fame shall receive an individually tailored plaque which highlights their contributions and achievements. A permanent CLPA Hall of Fame display shall be maintained by PAMPA at the AMA National Model Aviation Museum in Muncie, Indiana.

Committee: Wynn Paul, Chair; Bob Hunt; Bill Werwage.
Send requests for a nomination packet to:

Wynn Paul, Chairman
CLPA Hall of Fame Committee
3332 Carriage Ln.
Lexington KY 40517.
Tel: (859) 271-3394 (home)
E-mail: winnie3435@insightbb.com

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KING ORANGE INTERNATIONAL 2010

January 15th, 16th & 17th

Model Airplane Contest

Starke, Florida

CONTROLINE STUNT CONTEST

Sponsored by: **THE X-47 FLYERS**

The Academy of Model Aeronautics ~ Brodak Models
The Precision Aerobatics Modelpilots Association

The field will be opened for practice at 12:00 noon on Friday until Sunset

Saturday *Event start time: 8:00 am*		***Sunday*** *Event start time: 8:00 am*	
Old Time	Basic	Beginner	Intermediate
Nostalgia 30	Profile	Advanced	Expert
		Fly-off for the Perpetual Trophy	

Pilots Choice Award

Voted on by contestants to be best looking airplane
(B.O.M.) BUILDER OF MODEL RULE WILL **NOT APPLY**

Entry Fee

$15.00 for 1st Event • $10.00 for 2nd Event • $5.00 for 3rd and any additional events

LINE LENGTH RULE WILL BE STRICTLY ENFORCED 70'
FROM HANDLE TO CENTER OF FUSELAGE

Concessions will be available on site - drinks, hotdogs, hamburgers, chili, chips, etc.

RV sites are available with power and water (no spetic)
Cost $20.00 per night (Restrooms on site)

Contact: Contest Director Tom Weedman 904-794-5445
Alternate: Bill Hodges 904-501-4905

NO ALCOHOL IS ALLOWED ON CONTEST SITE

Contest Reports

Tampa Bay Line Flyers / MCRC Nov 1st 2009 Stunt Contest Results

AMA Open Event 322	Round 1	Round 2	Plane	Place
Jim Smith	472	461	Tracer PA61	1
Eric Viglione	445.5	469.5	Starfire PA61	2
Don Ogren	459	420.5	Cardinal Evolution	3
Wayne Smith	433	449.5	Tracer PA61	4
Tom Weedman	409	366.5	Vector Profile OSLA46	5
Warren Wagner	403	388	Time Machine 40 FP40	6
Phil Coopy	347.5	320	Vector 40	7
Sam Niebel	317.5	311.5	Nobler Brodak40	8
Bob Whitney	303.5	277	Flight Streak	9

PAMPA OldTime Stunt				
Owen Richards	183	216	Humongous ST51	1
Jim Smith	180.5	195	Sterling Mustang Fox35	2
Wayne Smith	186.5	173	Sterling Mustang Fox35	3
Larry Minott	164	179.5	Super Clown OSLA25	4
Bob Whitney	47.5	160	Internation Stunt Champ	5
Sam Niebel	137	149	Sterling Mustang Fox35	6
Tom Weedman	122.5	124	Barnstormer	7

AMA Beginner Event 323				
Larry Minott	162	pass	Super Clown OSLA25	1
Dave Hallas	140.5	115	F-Twister FP40	2

THE APPEARANCE POINT

by Charlie Reeves

At the Nats in Muncie, around 2004, I saw Bill Werwage with plans to his Super Ares that were drawn and inked by Warren Tiahrt. I bought a set to build my first (and only) I-beam winged stunter. I say "only" because since finishing it, I've noticed some soft spots in the wing caused by my heavy-handed handling.

About two years later, I actually built the wing, fuselage, and stab/elevator in Tom Morris's shop using his wing jig and forms that we made to mold the top and bottom blocks. In four days I had prefabricated the plane almost ready to assemble the major parts, including making the control system.

As I was building this Super Ares, I also built a little 1/2A twin model of the Chance Vought XF5U-1 Flying Pancake for the Profile Scale event that Mike Keville has started in Tucson and a new Big Job Old Time stunter. Maybe this will help explain why it took me so long to build the Super Ares, or maybe it's just that I'm so slow.

Anyway, the Ares first flew at the contest in Huntersville NC in May of 2009, and I was scared to death. That thing is so much larger than the Old Time ships that I've been flying since 1992 that it was really intimidating! It didn't compete there, but Randy Smith did set the needle on the PA 40 Ultralight engine and gave me some good advice on how to run it.

Several flights later I had it at the Nats where it was flown in Classic Stunt, placing fourth. I might have been higher if the engine hadn't hiccupped in the clover leaf, causing me to bail out of it and miss that maneuver and pattern points. You know … shoulda,' coulda,' woulda!' Several pinholes in the tank had caused erratic running, but those were detected and corrected. Boy, did they cause headaches!

After getting the tank squared away, the next contest was Memphis TN in September, where rain and high winds caused problems, but the Ares took first place in Classic, first place in Expert, and the Pilots' Choice award. All in all, a good weekend!

The next contest was the October contest at Huntersville where I flew it in Classic again, placing third. The engine run wasn't exactly what I wanted, and Randy told me how to solve that. During the week before Thanksgiving, I tried the suggestions that Randy gave and got the best engine runs that it had ever had.

Then on the second flight on Saturday, I pancaked it in at the bottom of an outside square loop, which has put it into the repair shop. My aim is to get it back into the air in time to get some practice flights before I take it to Tucson for the VSC in March of 2010. SN

SPECIFICATIONS:

Model Name:	**Super Ares**
Designer:	**Bill Werwage**
Construction Type:	**Beam wing with Polyspan covering**
Wingspan:	**60 inches**
Length:	**46½ inches**
Moment Arms:	**1-inches nose ring to front of wing; 17 inches H/L to H/L.**
Weight dry:	**60 ounces**
Power Package:	**Randy Smith's PA 40 Ultralight with 5.75-ounce metal tank**
Propeller:	**11 x 4.3 carbon fiber narrow 3-blade by Bill Lee**
Finish:	**Polyspan covering on wings, stabilizer and elevator with ¾-ounce fiberglass cloth and epoxy on the fuselage and wheel pants, Brodak dope with automotive clear coat**
Line length:	**62 feet eyelet to eyelet**

SUPER ARES

2009 Nats, one last look…

Dan Banjock gazes off into the distance and contemplates his next official flight with his original design Vista. Photo: Gene Martine.

Inset photo: Mike McHenry carefully pull-tests his original semiscale Japanese Zero. He won the 2006 Advanced crown with this same plane and then refinished it and now flies it in Open class. Photo: Gene Martine.