FlightLine

A Monthly Publication of Collins Model Aviators November 1998

Reminders:

- **Next CMA meeting is Thursday November 5th**
- **The second Build Session is Thursday November 12th**

Featured Photo:

This month's featured photo is of a Fournier RFD-4 and was sent in by Frank Gutierrez. He sent in a number of photos including some in-flight images digitized from his video camera. His article with more pictures is on page 2 of this issue. Specifications for the full-scale version are on page 6. Thanks Frank for showing us what your family has been up to.

James H. Doty, FlightLine Editor ✈

In This Issue:

CMA Web Page Addresses:
http://bbs.cacd.rockwell.com/data/clubs/cma/
http://members.aol.com/cmaflightl

CMA
COLLINS MODEL AVIATORS

Collin Model Aviators
Academy of Model Aeronautics
Charter Club #3257

ratio of about 10:1. The power plant is an O.S. .20FP. The airplane has 3 official flights and each one successful. It demonstrated its ability to fly in wind and gust on Friday October 23, 1998. Drew said "it flew like he was balancing a broomstick on the end of his finger". It is very aerobatic, fast and quick to respond. The CG may still be a little aft even though we added more weight up front before the first flight. The ailerons are set up with bell cranks and actuated with one servo lying on its side. They produce a large amount of up and very little down. In a turn or roll it is easy to see the deflection of the ailerons and fun to watch on video. This is an airplane design that certainly has potential.

Fournier RFD-4

by Frank Gutierrez

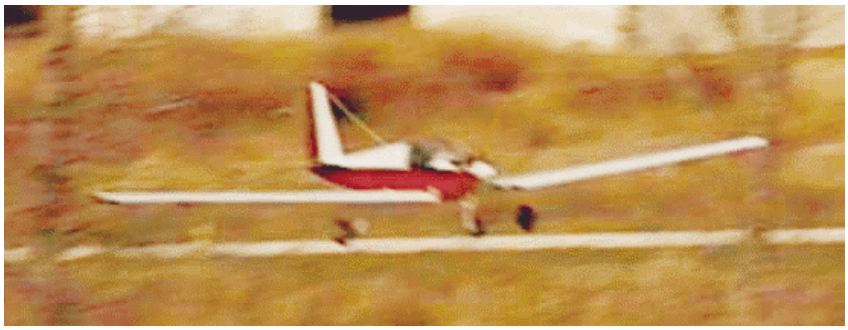
The feature plane for this month is the Fournier RFD-4. This is a semi scale plane of the real aircraft built in England as a powered glider. This particular R/C model was built approximately in 1978 and became airborne for the first time this year on September 3, 1998. This 20 year old aircraft was built by Ron Dittmar (my uncle) and piloted by Drew Gutierrez. The wingspan is 78" with a total aspect

Being very interested in this particular model, I began asking about finding plans. After 20 years my uncle couldn't come up with the plans. Rich Dean happened to have a set of Bob Homan plans that were printed in England that he donated to me. This model calls for an O.S. .40 four stroke and has an 81" wingspan. The airfoil section for this plane is semi-symmetrical and

tapers from an inch plus at the root to about three eighths inch at the tip. The scale plane has a retractable nose wheel up front and the model we are currently flying was built with conventional gear. Even though I am a scale buff, I am considering conventional retractable gear to clean it up in flight as well as foam cut wing reinforced with carbon fiber and balsa sheeted. My winter is taken up with repairs and three new models, One of, which is assisting Evan in building his Sig Kavalier.

Jay Gutierrez 4 years old got his first introductory flight at the Marion field on Friday as well. Assisted by his two brothers flying the Skyman, he demonstrated that he has what it takes to learn how to fly R/C. He has been practicing on the flight simulator and can take-off and land without crashing. His specialty is doing loops—he is good at that and it has become his favorite flight maneuver.

Frank Gutierrez, CMA Flight Instructor. ✈



President's Column

by Crist Rigotti

Well, I didn't get to fly much this month. But the up grades for the heli worked out very well. I'm pleased with the way it is performing. Over the winter, I'll change the engine from a Thunder Tiger to an OS. The OS puts out a little more horsepower and it can run a little leaner without overheating. The Thunder Tiger head design runs hot when leaned out, so I've been running it on the rich side. Note that this is on the heli engine only. The Thunder Tiger airplane engine runs great.

Already planning my winter project. It'll be a Zenith 40 this time. I'm going with the 40 size because I want to lengthen the fuselage, aft of the wing, by three inches. The length will only be three inches shorter than the 60 size I built last winter. It'll be easier to fit in the car! Other changes are: a foam wing with dual servos, higher turtledeck for cosmetic purposes only, an aluminum landing gear instead of music wire, an inverted engine, and plywood fuselage doublers instead of balsa. Look for pictures and a review on how it turned out in a future newsletter.

I understand that we will be having a demonstration on foam cutting and wing build up in the near future, like the December meeting. Looking

forward to that. Let me encourage anyone in our membership to give a little demonstration on any building, covering, trimming, radio installation, set-up, flying, etc. technique or shortcut. Sometimes we take for granted that "everybody knows that"! It'll make the meetings more interesting.

It is the third week in October when I'm writing this and I haven't heard of any nominations for next year's officers. Remember that we only have till the November meeting to nominate officers. This gives us time to print and distribute the ballots by mid November so they can be ready to be cast during the December meeting. We really need some fresh faces next year. I say this because new members need to be involved with the administration of our club. This provides a certain "freshness" every year. Besides everyone needs to "pitch" in and be a helpful, productive member to promote model aviation.

I missed last month's building session. I got a touch of the "crud" that was going around. I'll try to make it this month. It is a lot of fun to get together and share ideas and projects that we are involved in. Even if you're not building something, bring your model and "go" over it. A good cleaning and wax job will keep your model "looking good". Don't miss the building session scheduled for the 12th.

I have been very busy this month, and I don't have much information on the search for the new flying site. If anybody has any leads or info please pass it on to either myself, Rich Dean, Mark Woytassek, or any of our officers. Remember if we don't have a flying site, though "hangar flying" is fun, we don't have much of a club!

I'll close with my safety comment this month. With the building season upon us, lets turn our attention to our workshop. When using our hobby knife, be sure your fingertips are NOT over hanging the edge of the ruler! Think about it, it'll come to you! First "hand" experience! Also take into consideration when using your knife, on the direction you cut. What is in the way, just in case it slips? Watch flammables around the furnace and hot water heater too! Perhaps open a window when using "smelly" glues and finishes. If you use a space heater, keep an eye on it for loose debris, (balsa shavings, scrap paper, Monokote backing, etc.). We have plenty of time from now till next season to finish that dream model so, be careful in your shop. Straight edges, sharp knives, and plenty of glue: may we all have a great time building!

Crist Rigotti**,** CMA President✈

October Minutes

By Doug Emerson

October 1, 1998 Minutes

Crist Rigotti called the meeting to order. There were 15 people in attendance.

Old Business:

The September minutes were approved as read.

There was no treasury report.

Rich Dean reported that he was turned down an excellent flying site for next year. However, we still have leads to follow up on.

New Business:

Rich Dean asked that we set a date to clean up the flying field. Saturday, October 31 was set at the day to remove everything from the field. Crist will send an e-mail message out to the membership to request clean-up help, pickup trucks and a place to store the flight box, spool, etc.

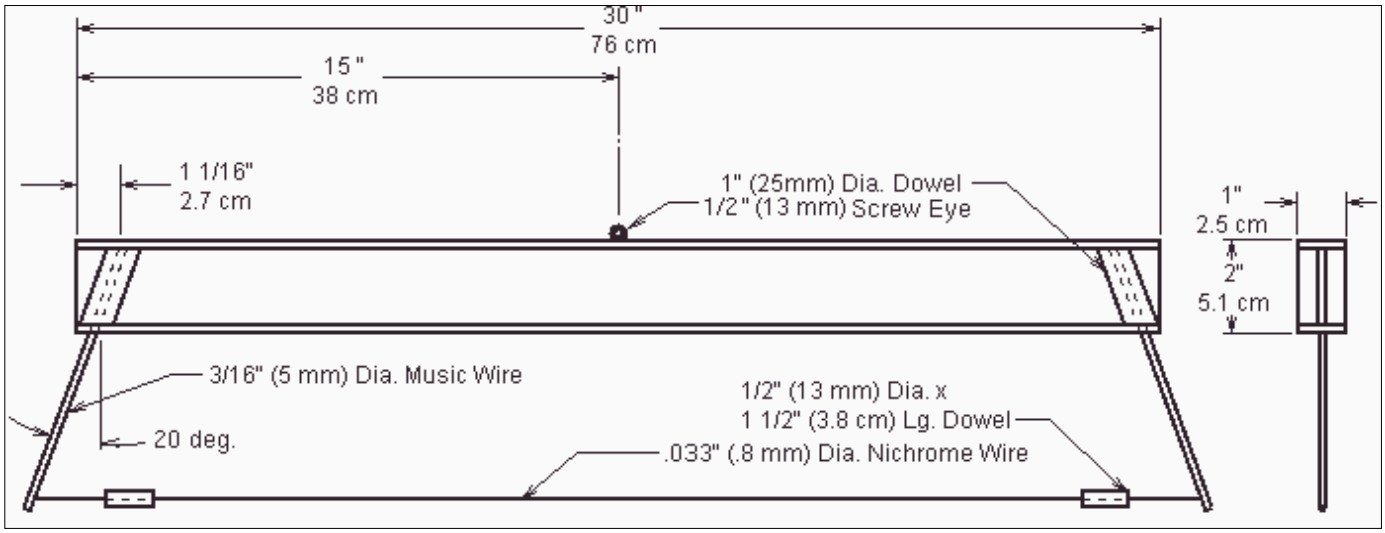
Nominations for officers were discussed. No nominees were provided by the attendees. We need nominations by next meeting. Crist will send out an e-mail recruiting people for positions.

Rich Dean would like to start a build session in October. Frank Gutierrez suggested that we continue to make announcements in the Rockwell Collins Today news bulletin. Example items include build sessions, and the field search.

The meeting was adjourned.

Thanks to Floyd Van Auken for taking the notes for the minutes of the meeting in my absence.

Doug Emerson, CMA Secretary✈



In The Pattern

By Frank Gutierrez

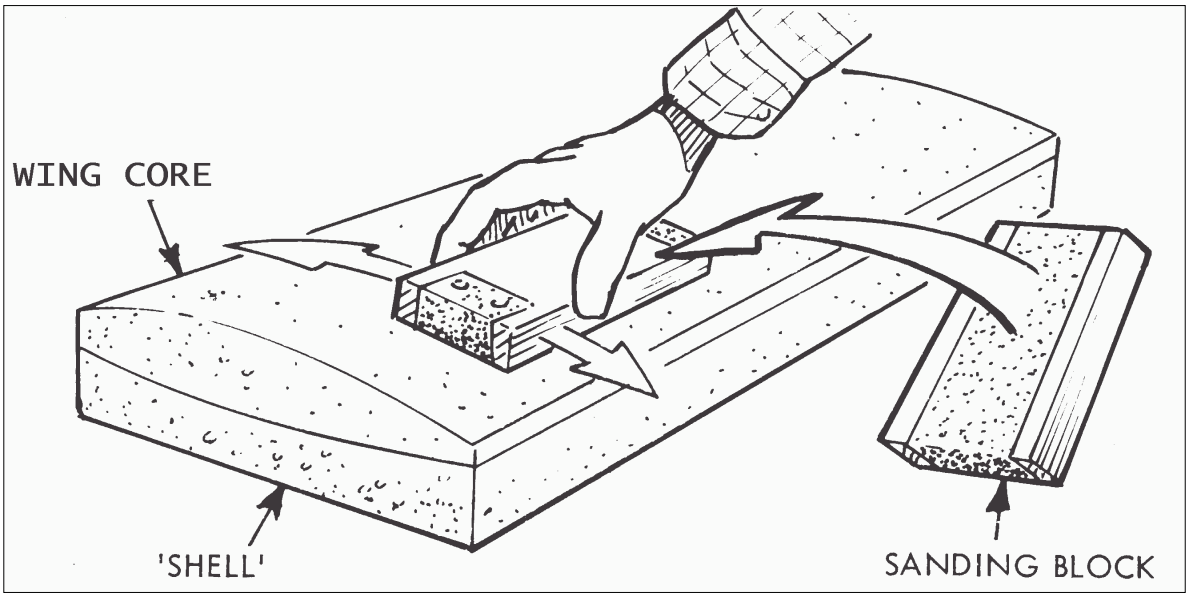
Plan on attending the January 7th Club Meeting for the Foam Wings and Things demonstration by Don Rosendale (Cedar Rapids Skyhawks) and Frank Gutierrez. We will present what is required to build your own foam cutting system from parts purchased at the local hardware store and hobby shop as well as demonstrate how to make foam cutting templates, cut and finish foam wings, turtle decks, and other shapes for building airplanes. We will also have available a comprehensive *FOAM CUTTING MADE EASY* manual that will be given away at this meeting to add to your how to collection. If you have any special projects you would like a foam wing cut for, contact me, Frank Gutierrez, to get rib templates made for the foam cutting process. After seeing how quick and easy this process is, you will certainly gain a greater knowledge of alternative building methods. To recap on where you can buy **White Expanded Bead Polystyrene Foam**:

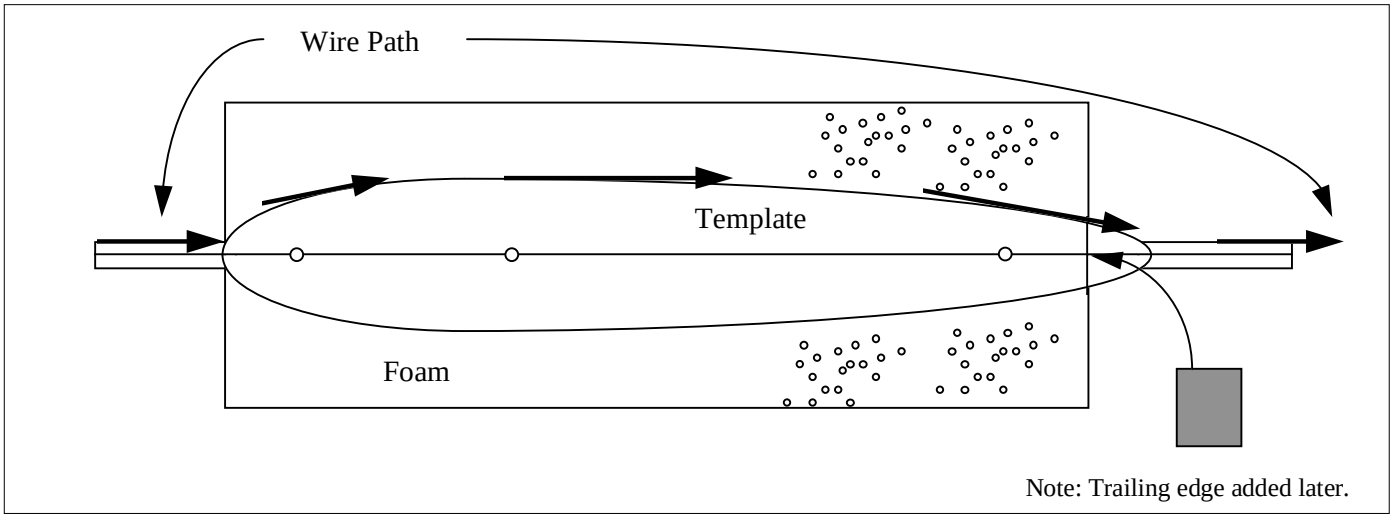
Menards (Across from Lindale Mall):
378-3220

1 1/2" x 14" x 8'	$1.99
1 1/2" x 4' x 8'	$4.98

Eastern Iowa Supply Inc.:
4601 6 St SW
Cedar Rapids 52404
366-8993

3" x 2' x 4'	$3.50
4" x 2' x 4'	$4.50
5" x 2' x 4'	$5.50





Note: Trailing edge added later.

Using other types of foam will be discussed at the meeting as well, See you there!

Frank G., CMA Flight Instructor ✈

Fournier RFD-4 Specifications

By Jim Doty

I found the following information for the full-scale Fournier RFD-4 in *The Complete Encyclopedia of World Aircraft*, General Editor David Donald, from Barnes & Noble Books NY.
The Fournier RFD-4 was built in the late 60's and evolved from the RF01 built in 1960 by René Fournier. The plane combines the basic characteristics for a glider with a small Volkswagen engine. In May 1969 Miro Slovak flew an RFD-4 across the North Atlantic in 175 hours 42 minutes.

Specifications:
Name: Fournier RFD-4
Engine: 40 Hp modified Volkswagen
Cruising speed: 112 mph max 99 mph economy
Service Ceiling: 19,685 ft
Powered Range: 416 mi
Weight: 584 lbs empty 860 lbs max. takeoff
Wing span: 36' 11'
Length: 19' 10"
Height: 5' 2"
Wing Area: 121.6 ft^2

National Newsletter

Building Tips

by Tom Dean

Before you begin building, study the plans, read all of the instructions, make sure you have all of the things required to build it, and start a list of the things you are going to need to get. Unless you really know what you are doing, plan on building the kit the way the instructions say.

Pin or tape the plans to your work surface so that they are flat and wrinkle free. Any slack in the plans at this point might cause problems in later building. Before building, cover the plans with a plastic to protect them and preserve them for later use. Many people use waxed paper, but this is not a good idea if you are going to be using epoxy.

The things to be most concerned with in building a plane are making sure that the components are straight, strong, and light. Install the radio equipment and battery where shown on the plans. The balance of the plane on the CG is vital.

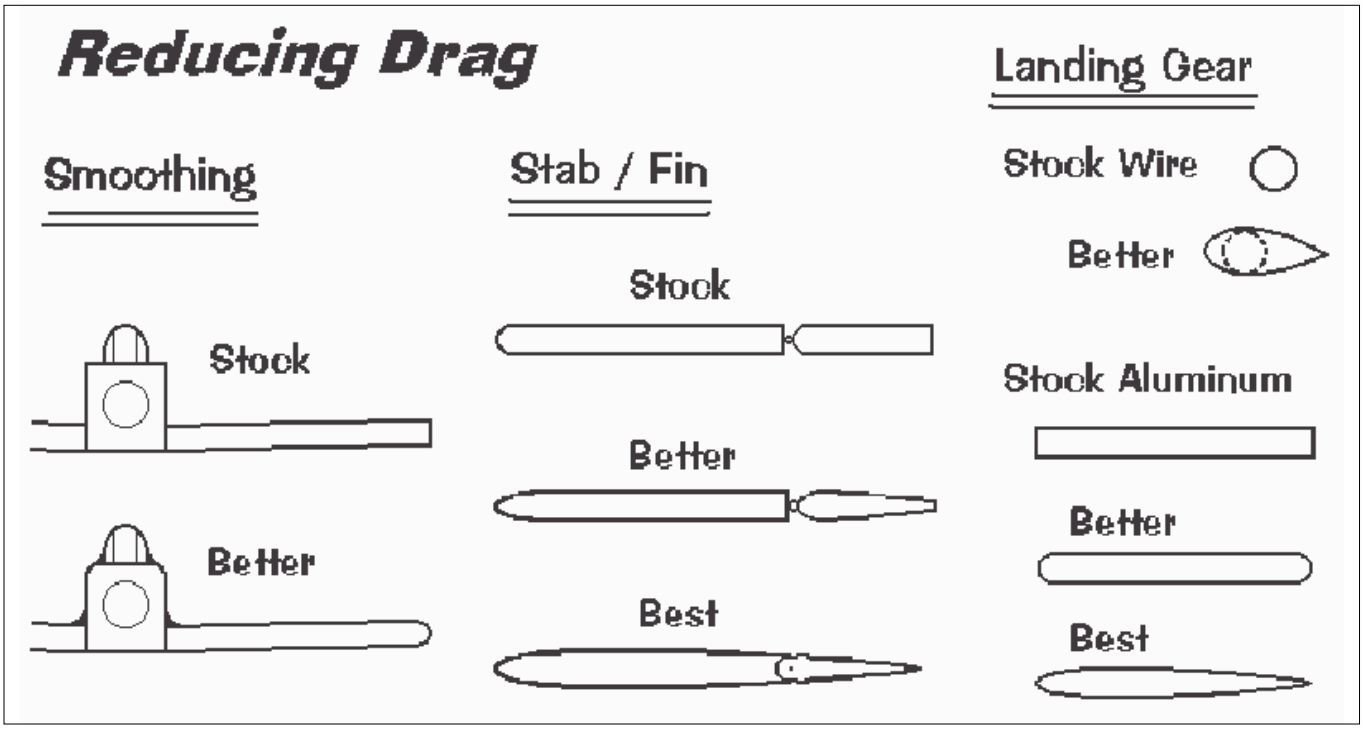
If you are not familiar with CA glue, here are some things to be aware of: The thin variety of CA is very fast curing but has virtually no gap-filling qualities, so tight-fitting joints are required. Medium to thick CA will fill gaps and takes about a minute or so to cure. CA also has a bad habit of passing a puff of gas when it sets up. Don't look directly at the joint as it cures. The gas may burn your eyes. The technique for using CA is to press or clamp the pieces together and then apply a tiny drop or two of CA to the joint. CA does not stick to itself very well, so if you have already used it on a surface, sand it off and expose fresh wood before gluing.

Your kit might or might not require epoxy joints. Be certain that the parts you are bonding fit well before mixing the epoxy and catalyst.

Sanding is perhaps the most tedious part of building the kit. It also determines to a great extent the aerodynamics of the plane as well as the overall quality of workmanship. The wing is the most important component of the plane. Sanding the leading edge of the wing requires the most care. Avoid changing the shape of the airfoil by over-sanding the tops of the ribs. It is unnecessary to sand the trailing edge to a razor-sharp contour. For now, leave a little strength in the trailing edge. Fill in any gaps with a lightweight filler to make covering smoother. Take your time before covering to get everything nice and smooth.

Keep the extra scraps of wood from the kit and save any die-cut sheets. These sheets can serve as patterns for repairs or new building.

from Gull Wings
Torrey Pines Radio Control Society, Inc.
Ron Scharck, President✈



Reducing Drag

by Clay Ramskill

This subject is tough, assuming we want to stay clear of complexity. To get into the nitty-gritty of drag reduction, we need a wind tunnel, some heavy computations, and a whole bunch of witchcraft!

So we'll stick to some more basic principles, and leave the name dropping and number crunching to someone more learned than we are! We do, however, have to make one distinction: drag due to lift. That is pretty much separate from the rest, because it's strictly a function of lift. The more lift we need, the higher the angle of attack our wing

must operate at, the more lift drag we have. And once our wing area, shape, and airfoil are established, there's really only one control we have, and that is the weight of the plane.

Put simply, the heavier the plane, the more this form of drag will degrade performance. Having gotten past that, there are several other drag components to look at: Cross-sectional area, form drag, skin friction, interference drag, and projections.

Cross-sectional area is easy. The more air you have to push aside as you go through it, the more drag. So we need to keep fuselages reasonably slender, and airfoils reasonably thin. But the size is not nearly as important as shape.

Form Drag: Good streamlining is an area where we can really see some results. What we'd like to see is every component of the plane shaped like a good symmetrical airfoil, or drop tank as seen on jet aircraft. At the speeds we're interested in, a really sharp point in the front is not necessary (that's what you see on supersonic planes!). What is desirable is a nice smooth curvature. Where we do want the pointiness is at the rear. A good, smooth, continually tapering curve ending at a relatively sharp trailing edge or point.

The main thing to avoid is abrupt or angular changes in the airflow.

Retracts: The worst contributor to drag is the landing gear. Fixed gear drag can be reduced by wheel pants and cuffs on struts, but retracting gear is the obvious solution. There are, however, weight, complexity, and expense penalties.

Skin Friction: First, the less skin, the less friction! Rounding corners not only cuts form drag, it cuts the skin area. Round forms enclose the most interior volume with the least skin area. A smooth skin cuts drag. Dirt, rough covering overlaps, and covering wrinkles all increase drag. You won't do much better than good sanding and covering! We should point out that sharp corners, even when aligned with the airflow, will tend to increase turbulence and produce more drag. A rounded fuselage is less draggy than a square fuelage. The same goes for wingtips.

Interference Drag: We did a nice little wind tunnel experiment in school. We measured the drag of a fuselage, and then the wing. Then we put in the wing and fuselage attached together. The combination had extra drag beyond the sum of the components!

The interference caused by projecting objects (like wings, landing gear, gear struts, stabs, etc.) can usually be reduced by the use of fillets. These were quite pronounced on WWII fighter wings, as on the Spitfire and P40 with the interior square corners rounded off, carrying the rounding well aft of the wing. You'll see these on pattern and racing planes.

Projections: The best solution to projections is to get rid of them! Retract the landing gear, hide the control horns, enclose the radio antenna, countersink the bolt heads, etc. Cowl in the engine, and use an enclosed muffler. Look at a competitive pattern plane. You'll see all of these features.

Drag reduction involves many details, all of which add up in achieving your goal. If you want to go fast, get out the sandpaper. But remember, we need both a smooth skin and a smooth form!

from Clay Ramskill
7 Towers RC Club
cramskill@arlington.net
http://www.startext.net/homes/cramskill/inkclay.htm✈

Ponder This

What does Geronimo yell when he jumps out of a plane?

Is there another word for synonym?

Why isn't phonetic spelled the way it sounds?

When your pet bird sees you reading the newspaper, does he wonder why you're just sitting there, staring at carpeting?

How do they get the deer to cross at that yellow road sign?

If a mime cuts down a tree, does it make a sound?

Why does the psychic hotline ask for your credit card number?

from The Plane Truth
The Circle City Flyers of Corona
Dave Baskin, Editor✈

Heads Up, CMA Activities

Thursday, Nov 5, 5:00 pm — Club Meeting
Thursday, Nov 12, 6-9 pm — Build Session #2
Friday, Nov 20, 5:00 pm — FlightLine Deadline
Thursday, Dec 3, 5:00 pm — Club Meeting
Thursday, Dec 10, 6-9 pm — Build Session #3
Friday, Dec 18, 5:00 pm — FlightLine Deadline

Note: Meetings and build sessions are held in the 35th street N.E. Facility (main plant) Cafeteria building 140.

Send your input for the CMA Web Page to:

Steve Plantenberg x5-9625
scplante@cacd.rockwell.com

For an AMA membership application:
http://modelaircraft.org/Mem/Memapp.htm

Build Sessions

Build Sessions are the second Thursday of each month in the Main Plant Cafeteria from 6 to 9 pm

1997 CMA Staff

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Mark Woytassek

Flight Instructors in training:
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The FlightLine is now available on the World Wide Web (outside the firewall):
http://members.aol.com/cmaflightl

1998 CMA Membership

NAME	M/S
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Geoffrey Barrance	108-166
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Larry Black	155-100
Bob Buschette	108-260
Kyle Chapman	124-111
Brian Collins	192-111
Dan Cooley	124-111
Rich Dean	124-115
Ed DeRuiter	124-111
Jim Doty	124-111
Mike Eastman	106-183
Doug Emerson	153-260
Scott Emerson	105-167
Frank Gutierrez III	108-166
Richard Kelly	124-115
Gregg Lind	108-166
John Michael	108-166
Patrick Neu	108-136
Jeff Niemeier	106-186
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Steve Plantenberg	137-152
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Duane Smith	108-135
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Van Snyder	108-104
Steve Timm	105-190
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Charles Ward	139-142
Bryan Wesner	153-260
Mark Woytassek	137-137

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