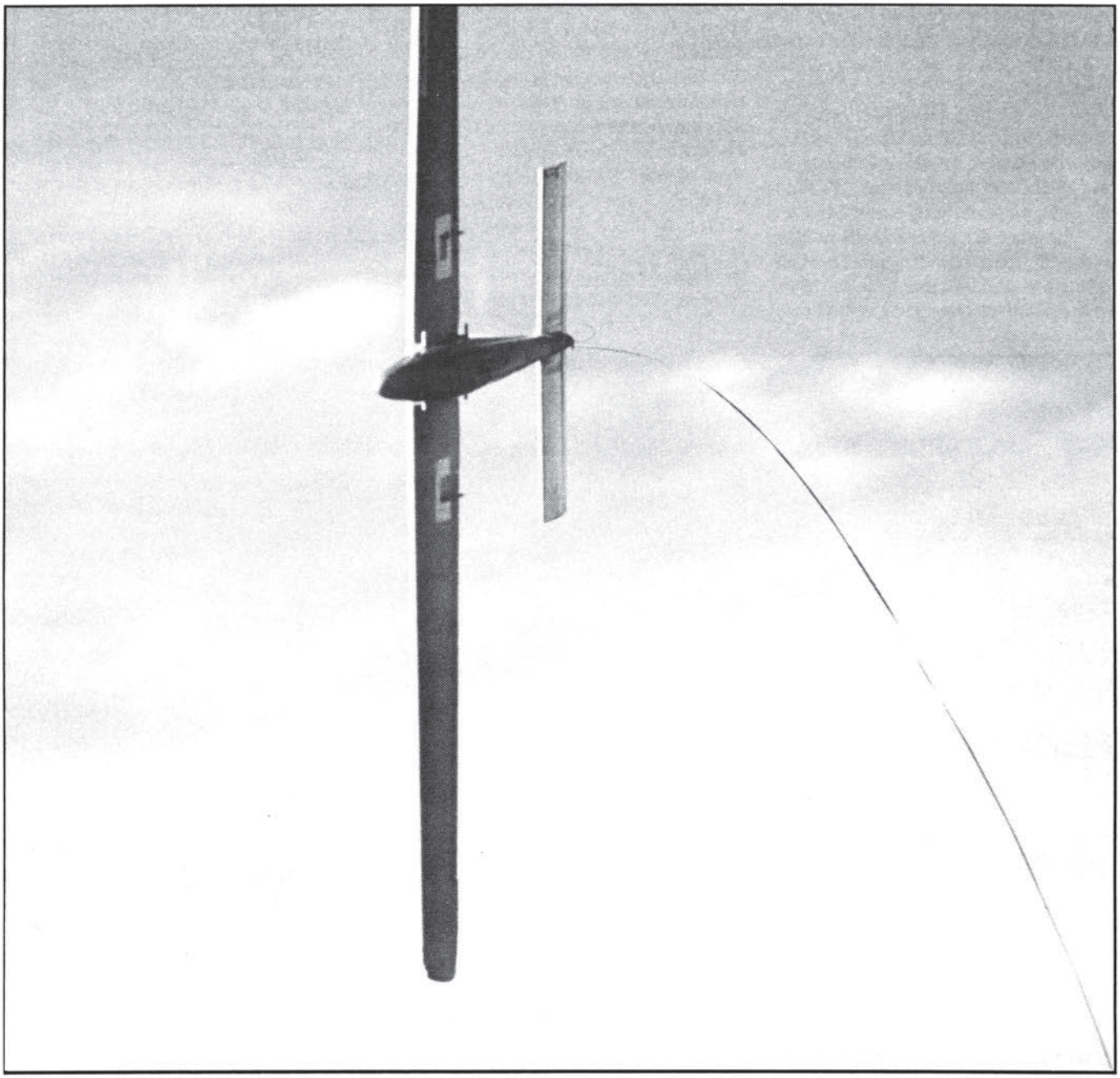
Slope Combat Special

Dogfighting for Fun with the Maneuverable and Almost-Indestructible Super Cheetah!

Slope Soaring News

Vol. 1, No. 2 November 1988 $1.50



PLUS: Simon Cocker's 13-foot Wingspan B-52 Stratofortress! • How To Vacuum-Form Your Next Fuselage or Canopy • One-Meter Slope Racer? Lift: What Is It? • How To Roll by Tipstall Wingover, III • There's a New Fokke-Wulf on the Slopes! • Site of the Month: Long Beach's Bluff Park

Wingin' It

Lazy Days

While researching this month's Combat Special Issue, I got to go flying with Larry Pettyjohn. We went to one of his favorite slopes up behind Malibu. He flew his Cheetah as I took pictures, then he handed me the transmitter.

I cautiously "felt out" the plane, gradually getting braver and braver. I love to fly different gliders, but I hate flying someone else's plane. I know that sounds contradictory, but I'd feel terrible if I crashed it, even if it were due to a radio glitch or another cause beyond my control.

Well, everything went fine with the Cheetah. In fact, I'd call it an excellent aileron trainer in addition to being the state-of-the-art combat ship. Perhaps that statement sounds contradictory, too. But there are several traits needed in both gentle, beginner-style maneuvers and intense combat situations: response, low-speed stability and crash resistance.

"Sometimes I don't feel like playing Top Gun in the slot with three other crazed aileron twisters."

Response can be adjusted with servo linkage and/or dual-rate transmitters to suit the flier's abilities and requirements. The Cheetah design will respond to those varied settings: quick for the fighter, gentle for the learning pilot.

The Super Cheetah's airfoil lets it slow down and turn tight for combat – which is sorta like a slow-moving beginner blunder where the pilot overcontrols while trying not to go too fast. Another plane would stall out and auger in...which brings us to the best part.

Hey, the Cheetah's not a show plane. It's homely at best, but, boy, is it tough! ("It's butt-ugly!" Larry Pettyjohn says.) Whiffle ball bats break long before Cheetah fuselages even feel the strain. Plus, the breakable parts are quick rebuilds, and Cheetah sells the parts individually, so you don't need to keep your own inventory of kits to rob.

Then I brought out my new French Flyer. You may have read about Greg French's glider in our "Want Ads" section. It's sleek, it's fast, it's unforgiving. The Flyer is not an aileron trainer.

Mine was brand new. At $85 for a completely-built, covered, wingeron, full-floating V-tail with both servos and linkage installed, I couldn't resist!

I hadn't flown it before. Wind conditions and my time-off schedule had been running in direct conflict, but now the time was right.

Balance and trim proved to be just about right as the Flyer rose in the steady lift and moved out from the slope. But when I tried to turn, it resisted, pulling in the opposite direction first, then turning sharply when I increased stick input. Aileron (wingeron) differential was the problem. Larry and I adjusted the throw to give more "up" than "down" on the trailing edges and tossed it off again. This time, it flew like a thoroughbred. It changes direction very quickly, and with the thin, tapered fuselage, it's impressively fast.

There's still some trimming to be done (picky, picky, picky...), but I like it, and I think I'll ask Greg to start work on another one.

One last plane. As I mentioned, my day-off/wind-condition ratio has been crummy lately. Like most of us, I have only a limited amount of time to play, and it's quite tightly scheduled among other things.

As a result, I've been carrying one of Dick Vader's (uh-oh, another Vader plane story) 50-inch polyhedral pod planes with me everywhere I go. When the lift is good, it obviously flies well. Dick's *tri*hedral wing breaks and a rudder the size of San Bernardino County give the little devil a nice roll rate, so it's fun when my mindset says, "aerobatics." The undercambered wing and light (11-oz.) weight also let it be the last plane down when the lift leaves.

If all else fails, I can hand-launch it off the hill, bring it around one or two laps, land it, then launch again. Which is better than no flying at all.

The little floater is best of all on my lazy days. Sometimes I don't feel like playing Top Gun in the slot with three other crazed aileron twisters. At times like that, I take my kite-flying mentality off to the end of the slope, toss off the floater and sit (or lie) back and just see how high it can go...

Charlie Morey

CONTENTS

Features

Site of the Month

Flying Techniques

Scraps

Departments

STAFF

Charlie Morey
Chuck Korolden
Marcie Berriz

EDITORIAL CONTRIBUTIONS are welcomed. Unfortunately, we can't pay for them. Editorial material is selected based on its perceived value to the slope-soaring community, and the publisher assumes no responsibility for accuracy of content.

CLUB CONTRIBUTIONS are welcomed. Please keep us notified of your club's events and/or fun flying activities. Material printed will be selected at the discretion of the editors.

ALL CONTRIBUTIONS should be addressed to SSN, c/o Charlie Morey, 2601 E. 19th St., #29, Signal Hill, CA 90804. All contributions requested for return must be accompanied by return postage. The editorial deadline is the 15th of the month preceding the cover date. All material is subject to editing and revision as necessary to meet SSN requirements. We can accept Ascii text files over the phone or work with your IBM-compatible 3-1/2" or 5-1/4" disk. Please call first for details at 213/494-3712. Don't get depressed if you get our answering machine. Just leave your name, phone number and the purpose of your call, and we'll get back to you.

ADVERTISING inquiries should be addressed to SSN, c/o Charlie Morey, 2601 E. 19th St., #29, Signal Hill, CA 90804, 213/494-3712.
SUBSCRIPTIONS are $15.95 per year in the U.S.; $22 U.S. currency per year in Canada/Mexico; $26 U.S. per year in Europe/England; $30 U.S. per year in Asia/Pacific/Middle East.

Aileron planes have to stay in close to fly at Long Beach.
Long Beach offers both easy outside lift for floaters and an in-tight, low-altitude hot slot for intense aileron action!

Site of the Month

BLUFF PARK

By Chuck Koroiden

Long Beach's Bluff Park is the place where I learned to fly, and it's where I do most of my flying now. The bluff is not noted for its booming lift, but for me it's close to home and the office, so I get to go flying even during lunch if conditions are right.

In the summer, the lift starts to come up around 11:00 or 12:00. By 1:00 p.m., it starts to get good (for Long Beach, that is). Typically, the wind starts straight in from the south and then drifts westerly as the day goes on. In the late afternoon, the wind sometimes switches due west, and because the slope faces south the lift says good-by.

This seems to happen right after I get home from work. I'll look out my window, see the palm trees shaking in their boots from the wind, grab my planes and head for the slope. I park the car, get across the street and throw my plane off...and the wind switches to the west just as I make my downwind run! My after-work relaxation is turned into mandatory exercise as I swear to the wind gods on my way down the hill to get my plane back. But sometimes the wind will switch back, and then it's like manna from heaven.

The bluff at Long Beach is only about 40 or 50 feet high, but since the wind comes in over the water (less turbulence), it can generate a good amount of lift for a small slope. Most planes fly well at Long Beach, but the real performers are the under-50-inch planes with micro gear for lightness. The best all-around performers are, without a doubt, Dick Vader's little 10-ounce pod-and-boom planes. If you like to fly big or heavy planes, this slope is marginal even on the best of days.

The landing zone at Long Beach is a double-edged sword. On the top of the bluff is a narrow strip of grass that runs parallel to busy Ocean Boulevard. It's a city park, so the lawn is kept trimmed and green, and the surface is soft and level. No rocks, bushes or hard-packed adobe. But the grass is only about 30 feet wide, and if the rotors don't get you, the joggers probably will. When you set up for landing and look to see if it's clear, it'll be wide open. Then, just as you pop over the rail and start to fight the turbulence, the joggers, dog walkers, senior citizens and little kids come out of the woodwork. So, be careful when landing, as we call it, "on the deck."

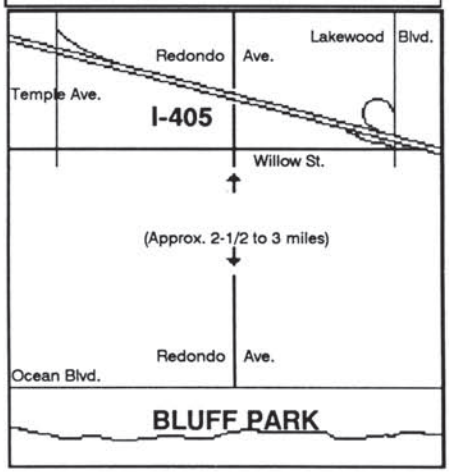
If, on the other hand, you don't want to deal with surprises on the landing zone and don't mind a short hike down the hill, landing on the soft, sandy beach below is a safe choice. It's also an excellent option for newcomers to slope soaring – saves a lot of wear and tear on new gliders. A lot of new floaters find their way into trees or under traffic when inexperienced pilots try to land on top. On the weekends in the summer, the beach has quite a few sunbathers, so you'll want to watch out where you put it down.

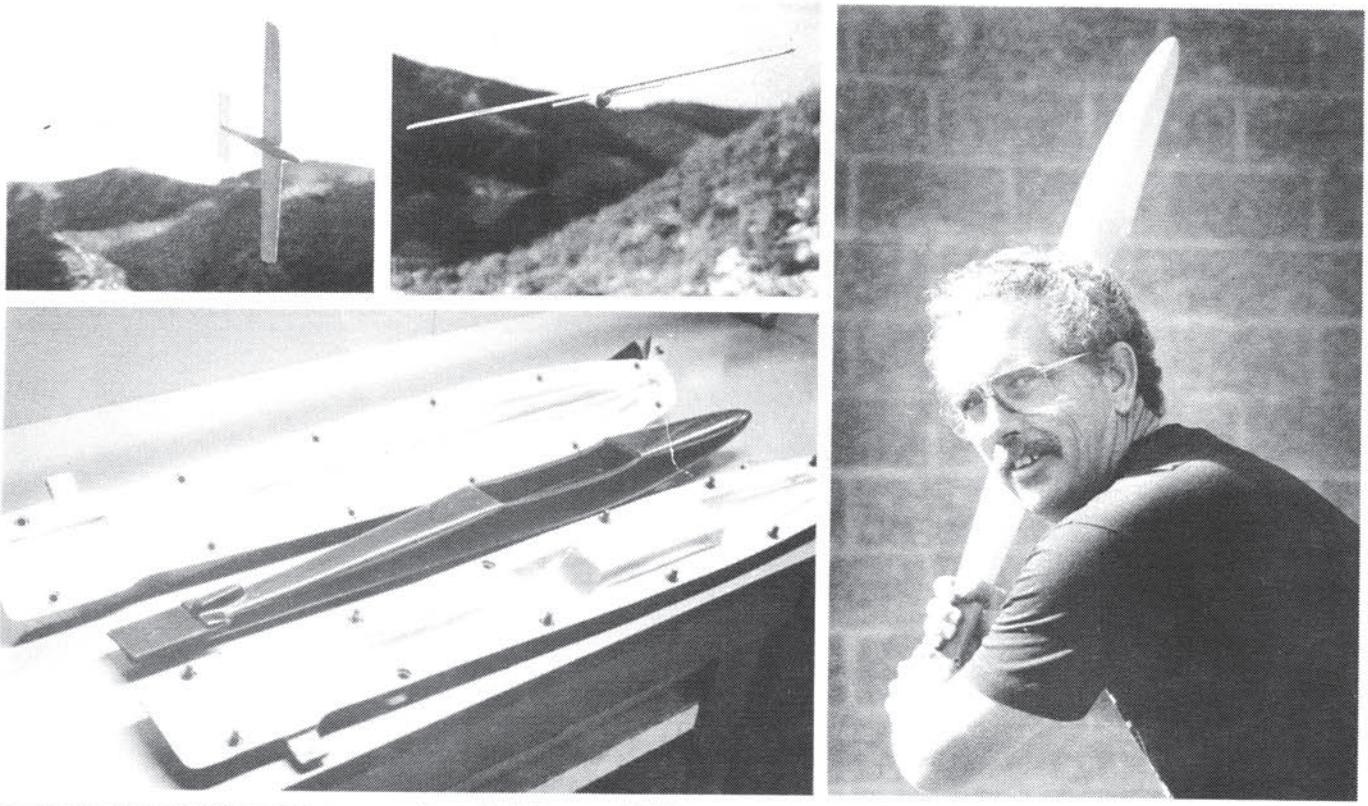
Well, that's about it. Except – as always – remember to show some class when flying at any slope. The more we respect what we have at all our slope sites, the less chance we have of losing them.

How to get there:

LOCALS: It's at the corner of Redondo and Ocean. You can't miss it.

VISITORS: Exit I-405 at Lakewood Blvd. Turn west on Willow. Turn south on Redondo. Go till Redondo ends (at Ocean). It's approximately 2-1/2 to 3 miles.





Those "butt-ugly" Cheetahs are well-suited for combat!
Tight maneuvers are child's play for the Super Cheetah, and it's built for survival. The cross-linked polyethylene fuselages – rotational molded in these polished alloy castings – are baseball-bat tough. Batter up!

SLOPE-SOARING COMBAT

Snoopy and the Red Baron never had it so good!

By Charlie Morey

One by one, the planes – each trailing a cassette-tape streamer – rise from their owners' hands and begin to work a steady pattern across the slope. They avoid each other, jockeying for position as their adversaries launch and join the pack. Like sharks swarming, they circle and swirl, watching...waiting. Some dive and turn, cut quickly, nervously, as if warming up for the fight. Some glide coolly, smoothly, climbing gradually above the mass. Then, much like a shark pack's feeding frenzy, they suddenly attack! For the next five minutes, the air is filled with slope gliders, streamers and exclamations (and expletives) from the pilots.

Over to the left, three have ganged up on one. Banking and diving, they attempt to swipe the streamer on his tail. In the excitement, two collide with each other, and in the low-altitude topple, find no room for recovery. The intended victim's pilot hoots loudly and clicks off a victory roll as the two assailants groan and begin the hike down to pick up their planes. The survivor's glee is short-lived as a new attacker clips his streamer cleanly.

Then, as suddenly as it began, a signal ends the carnage. The pilots bring their planes in to check for damage and prepare for the next heat.

"Combat, like any competitive sport, is fun! It improves your flying skills, and it definitely boosts your adrenaline level."

Combat. The name says it all. Dogfighting with slope gliders. Combat is not unique to slope soaring, however. In fact, the control-line power-plane fliers have developed it to a fine art. Occasionally, you'll see R/C power-plane fliers run a round or two, but their 10,000-rpm props, high speeds and heavy planes add an excessive element of danger to the participants and spectators alike. And the casualties are expensive.

In slope-soaring combat, one plane reigns supreme: The Super Cheetah. It meets all the criteria of a combat model. The rotational-molded, crosslinked polyethylene fuselage is unbreakable. The foam-core wings, stab and fin are quick to build and easy to repair. Most important, the Super Cheetah is homely. If it crashes, who cares? The ugliest, most combat-worn plane often wins, and that's the point.

The rules are simple, although they vary greatly from slope to slope. Larry Pettyjohn (he and his dad Bob manufacture the Cheetah and Super Cheetah) described what seems like a good set of basics.

First, the streamer is cut to seven times the wingspan of the model and must be attached to the tail. Longer streamers yield higher-scoring contests, shorter ones give lower scores...and more

midairs. Three to five fliers launch for each five- to seven-minute heat. One point is awarded each time you touch another's streamer. No points are awarded for midair contact. And you lose a point if you land before the end of the heat. If you land (rarely is this an intentional act), you are allowed to relaunch as many times as you wish within the time length of the heat. The number of heats flown depends only on the enthusiasm level of the fliers and the number of hours of daylight.

Of course, there are more aggressive versions. Locally, the name "Hughes Hill" can't be mentioned without someone remarking that they fly combat there without streamers. This format is usually referred to as "real" combat. And, yes, the object of the game is to put the other guy's plane into the ground without crashing your own.

A similar game is occasionally played at Long Beach, but instead of Cheetahs, the ubiquitous Dick Vader pod planes are put into action. They don't use streamers, either.

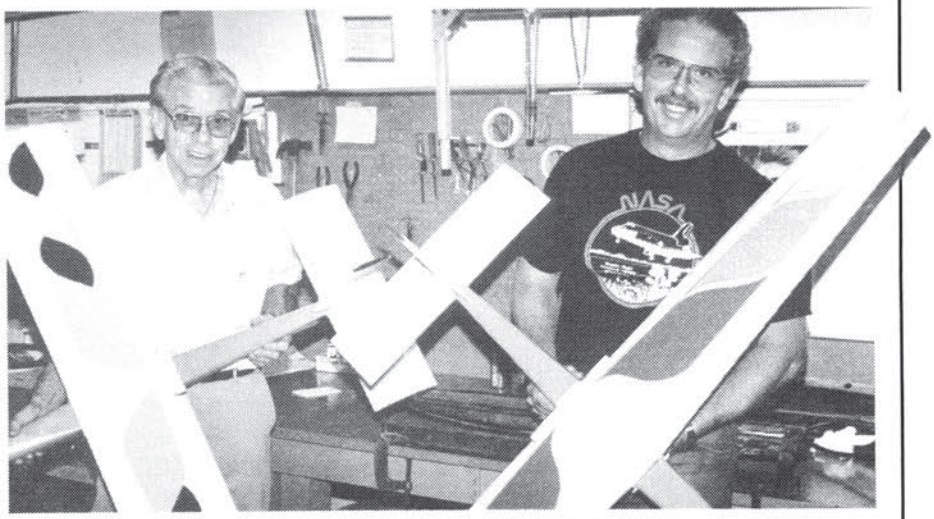
Combat is played with all types of slope gliders. It's surprising how much

THE SOURCE

Nestled in the back quarter of Liberty Letterpress in Van Nuys is a small airplane factory. As Larry Pettyjohn hustles from press to press, adjusting and tending the vintage machines, his father Bob is brainstorming in the back.

The Brains

Bob is a retired machinist and time-efficiency expert. He knows how to design and build tools that will cut labor time (and difficulty) to a fraction of prototype-building time. And he knows how to project the costs of that labor. He has applied those skills to the company called Cheetah Models. Tools built meticulously of wood and aluminum automatically cut wing cores, stabs and fins from huge blocks of foam. Ingenious jigs and cutting tools quickly put spar slots into the wing cores. And every second's labor is carefully calculated to keep costs (and ultimately your purchase price) as low as possible.



Meet the manufacturers, Bob and Larry Pettyjohn.
This father and son team designed and operate a tiny-but-efficient factory.

The wood is purchased precut from the manufacturer, and the cross-linked polyethylene fuselages are rotational molded by a vendor. Everything comes together under the Pettyjohns' skillful care. Even the boxes are assembled and packed in the back room.

The Planes

Larry's the glider expert. He's been involved for years, competed in club thermal events, flown combat and most other slope variants, gone through the full F3B circuit (and eventual burnout)...you name it. The San Fernando Valley Silent Flyers of several years ago were instrumental in such things as airfoil development of the Cheetah, and Larry's part of that old "guard" soaring crowd. Since he purchased Cheetah in the fall of 1986, he has flown nothing but Cheetahs. And that's not all bad. They're better planes than I'd imagined.

Cheetah fuselages are available in six colors: black, white, red, blue, yellow and orange. The wings are sheeted (by the builder) with chromecoat, a light, strong, heavy paper stock. It's cheap, good-looking and relatively tough.

Cheetah parts can be purchased separately (see the "Parts Prices" sidebar), so you can stock up on the breakable parts and go to war prepared to survive several heats regardless of the outcome.

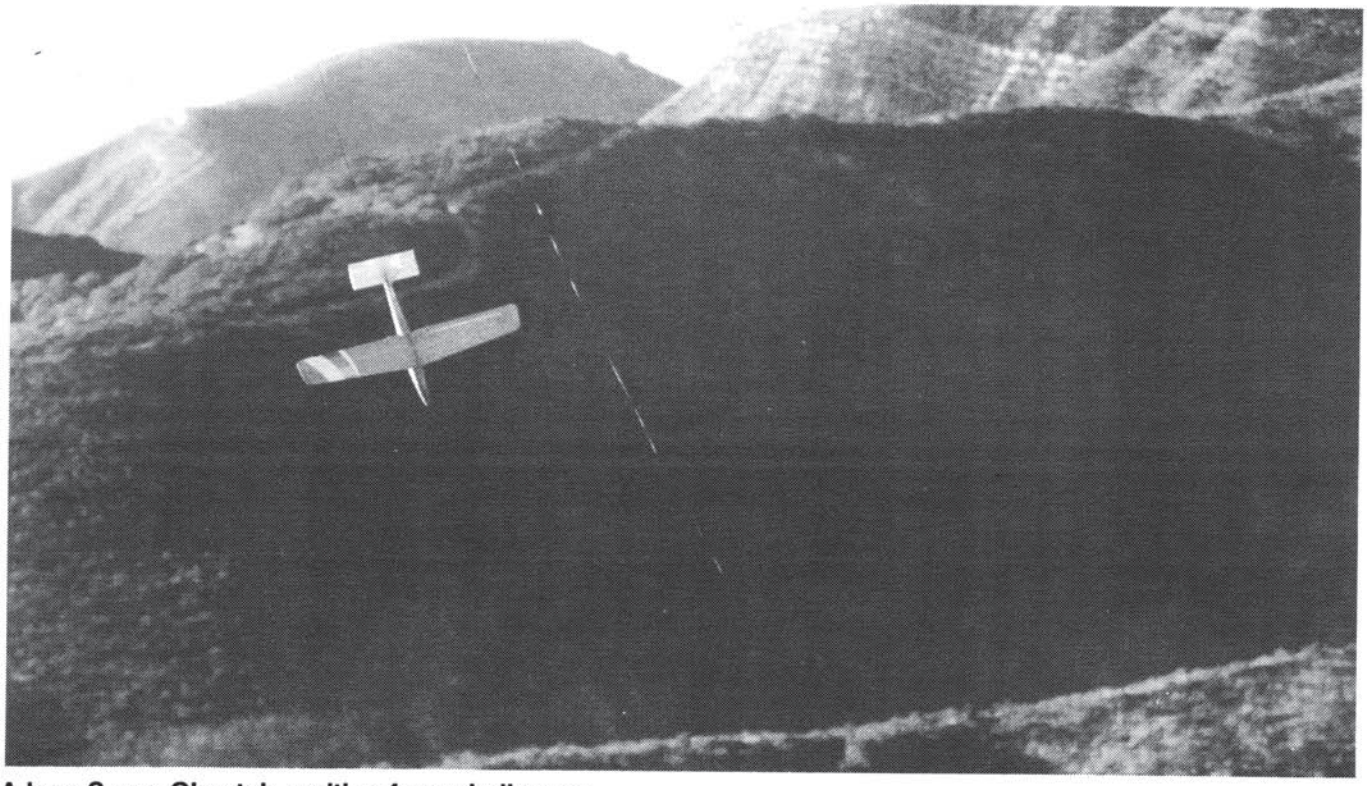
The Pettyjohns bought Cheetah from the original designer, Bill Watson. Evolution has produced the Super Cheetah, a larger combat ship. As the story goes, the San Fernando Valley guys got their butts kicked in a challenge contest with Aerovironment (the Gossamer Condor company) when the AV team showed up with 72-inch, Kevlar-covered wings against the original 48-inch Cheetahs. Jerry Krainock and Mike Bame built their own 64-inch wings, and Larry used Bame's airfoils to introduce the Super Cheetah.

So how does it fly?

I got carried away in my editorial column this month and wound up writing this part of the Combat story there. Since I only have 16 pages to give you as much information as I can, I hate to repeat the same stuff twice in one issue, so please see "Wingin' It" on page two for my impression of flying the Super Cheetah. Thanks!

Where to get 'em

For more information or to inquire about a dealer in your area (or to become a dealer), please contact:
Larry Pettyjohn at Cheetah Models, 14725 Bessemer St., Unit B, Van Nuys, CA 91411, 818/781-4544.



A lone Super Cheetah, waiting for a challenger.
Cruisin' for a bruisin'? Toss off your combat plane and take on Larry Pettyjohn's modified Super Cheetah. The obechi-sheeted wing holds two servos – one for each aileron – which are mixed with a rudder for quick turns.

fun it can be to pit two or more polyhedral "floaters" against each other with 14-meter streamers dragging along behind!

Rules of engagement include only a few seemingly obvious courtesies that nonetheless are sometimes ignored.

First, play only with willing opponents. There are stories circulating around the SoCal slopes about the mindless exceptions. You've probably already heard most of them. One Cheetah flier in particular is said to have noticed a new pilot's polyhedral model floating happily above. He remarked, "Oh, look, a drone!", and then cut the beginner's new airplane in half with one of his music-wire-leading-edged wings. Please don't contribute to the jerk-story quota.

Don't play combat in the middle of a slope where the majority of fliers are just fun flying. Inevitably, a nonparticipant's airplane gets taken out. If you're lucky, he'll be smaller than you and of good temperament, and you'll only get added to the jerk-story list and not the local hospital's critical list.

Combat, like any competitive sport, is fun! It improves your flying skills, and it definitely boosts your adrenaline level. If you, like Snoopy and me, enjoy daydreams that involve Red Barons, biplanes, P-51 Mustangs or F-15s, combat may be the game for you.

PARTS PRICES

Parts	Cheetah	Super Cheetah
Complete kit	$42.95	$49.95
Fuselage	20.95	20.95
Wing cores	8.50	16.95
Wing paper	2.25	3.30
Wing center stiffener	.40	.40
Stabilizer core	1.95	1.95
Stabilizer center stiffener	.20	.20
Rudder core	1.25	1.25
Rudder paper	.50	.50
Hardware kit	1.50	1.50

SPECIFICATIONS

Cheetah
Wing area: 432 sq. in.
Span: 48 in.
Stabilizer area: 105 sq. in.
Fuselage length: 35.5 in.
Flying weight: 32-34 oz.
Wing loading: 11 oz./sq. ft.

Super Cheetah
Wing area: 496 sq. in.
Span: 64 in. (tapered 9 in. to 7 in.)
Stabilizer area: 105 sq. in.
Fuselage length: 35.5 in.
Flying weight: 34-36 oz.
Wing loading: 10.45 oz./sq. ft.

LIFT

WHAT IS IT?

By Chuck Korolden

What a stupid question. Lift? It's what we live for! But it's more than that. Just because the wind is blowing up the slope at a good clip, doesn't mean the lift is good. In fact, the wind velocity, on a ladder of importance, is several rungs below other factors that are present but not readily obvious.

True, without Mariah, the other factors become moot, but with her they all function together as a whole. And that is called life...I mean *lift*. (How 'bout that, a Freudian slip on the keyboard.)

Lift is the combination of wind velocity and air density. As long as the air is going up faster than the plane goes down, you stay up. But soaring performance has more to do with the *quality* of the air than the *speed* at which it's rising.

"When things aren't up to snuff, even the best design becomes a dog."

When the two forces are in optimum, all planes fly well. When things aren't up to snuff, even the best design becomes a dog.

I didn't know these factors even existed until I started to build my own planes. One day they flew as I thought they should; the next day, it was as if someone had taken all the flubber out. And all this took place under almost the same wind conditions! As I learned later, the wind was the same, but the air was very different.

One day, I was test flying a new wing that I had shaped from a Jack Chambers JC-14 airfoil. Something wasn't right. I tried adding weight, then taking it out. I made adjustment after adjustment and flew again and again. Nothing seemed to help. I was about to give up and donate the wing to the release of tension when up walked Jim Slatt.

Jim is one of the slope masters, and he's made a lot of hand-shaped wooden wings. I told him what was happening to the plane and said that maybe I had done a poor job on the wing. He looked at it very carefully for a few minutes, then stated that it looked to him like a very good wing. It had proper wash-out at the tips and a clean Phillips entry at the leading edge. He saw nothing wrong with it and suggested that I put it away and bring it out some other day. "But the wind is blowing hard and fairly straight in," I told him. "There's plenty of lift out there!"

Jim said that the strength of the wind can be misleading, that I should never judge the flight characteristics of a new plane on just one day's flight. He went on to tell me how he once designed a wing that was sure to be a performer. He selected the lowest density balsa out of his stash of contest grade wood and went to work.

"Knowing about aerodynamics is important to building a good slope plane. Knowing about the dynamics of the air is equally important."

When he was done, he could hardly wait to fly it. He was sure it would be the best flying plane he'd made to date. But the flight that day was so disheartening he took the wing home and hung it in the back of the garage. Six months later he dug it out and gave it another try. It was everything he thought it should be.

The moral of the story, he said, is never to judge something you build without flying it on at least five different days.

This bit of advice stuck with me. Then I read a book loaned to me by a friend who flies hang gliders. It started to answer some of my questions. The book is called *Flying Conditions, Micro-meteorology for Pilots* by Dennis Pagen. It's written mainly about hang gliders and sailplanes, but the conditions are the same for R/C slope pilots.

"...soaring performance has more to do with the quality of the air than the speed at which it's rising."

Knowing about aerodynamics is important to building a good slope plane. Knowing about the dynamics of the air is equally important.

I'm working on my private pilot rating, and the things I'm learning have a lot to do with the condition of the air. Understanding the different factors involved in flying is now more important to me because the welfare of the pilot and not just the aircraft is a major consideration.

Next issue I'll go into more depth about how to judge an area, what kind of weather makes for better lift and what effect turbulence has on lift.

Any comments may be sent to me care of *Slope Soaring News*, 2601 E. 19th St., #29, Signal Hill, CA 90804.

BLOODY WELL RIGHT!

England's Power Scale Soaring Association thinks big

By Charlie Morey

They've got to be kidding. A B-52? Let's see...a 3.88-meter wingspan at 39-point-something inches per meter...jeez! That's 153 inches ...divided by 12 would be about 13 feet!

"I have already produced the basic foam components for an X-15, and I also intend to emulate the full-size launch technique, which should be good for a laugh!"

Actually, that's not so big for a typical European R/C sailplane, but the thought of tossing a 13-foot scale Boeing B-52 Stratofortress off Point Fermin is downright scary! Ah well, who knows? If Simon Cocker flew at Fermin, perhaps he'd have had second thoughts, too. Judging from the pictures that have appeared in several of the model magazines during the past year, the British PSSA fliers have some wide-open countryside to play in, presumably with wide-open landing zones.

Nonetheless, as you can see from the photo, the PSSA guys have decidedly got their act together when it comes to power-scale gliders! PSSA is organized by Alan Hulme. He publishes a quarterly newsletter, and we've agreed to exchange publications. So, hopefully, he'll keep us updated on their new and outrageous power-scale achievements.

If you'd like to join PSSA and receive the newsletter yourself, you may send £10 Sterling by international money order (available at your local bank) or with a British bank "cheque" which is a little harder to come by. Back issues of the newsletter are available at £2 each.

Power Scale Soaring Association
c/o Alan Hulme
52 Mountway
Waverton
Chester CH3 7QF
ENGLAND
Telephone: 0244 336472

BACK TO THE BOMBER

Believe it or not, the 1/16-scale B-52 is apparently now available in kit form. Mr. Cocker's address is listed in the "Dimensions" box, if you'd like to inquire about it. But first, let's let him tell the story of its concept and first flight, quoted from the PSSA newsletter.

"I have been almost obsessed with power-scale soaring for the past four years or so, almost to the exclusion of all other aspects of slope soaring. Recent projects have been gradually getting bigger...

"I guess the B-52 was a natural step in the evolution of foam/veneer construction and in my quest for the ultimate PSS machine. The B-52 is a dead ringer for PSS, having a very stable

aerodynamic airframe and, of course, a colossal wing area. The B-52 fuselage can be cut from polystyrene foam in four simple components and, with the addition of a nose block and the tail cone, a very quick and strong fuselage can be created.

"Having flown large scale gliders for many years (3.5- to 5.0-meter span), I've learned that the bigger you dare to build, the greater the rewards in the aircraft's flight characteristics. Smooth, efficient and forgiving are the usual traits.

"So, three rolls of decorator's lining paper later, I had designed all the details and drawn plan and side views of a 3.88-meter B-52 with a wing area of 20 square feet. Each wing panel was cut from foam and had three 1/2" x 1/4" spars. The leading-edge length of each panel is nearly eight feet and the root chord is 26 inches.

"The main section of the fuselage was cut from blue foam for added strength while the rear section (where weight was more critical) was cut from normal white foam of medium density. One-inch walls were cut, then veneered both inside and out. The fuselage when glued together is 10 feet, two inches long!

"Altogether, it took me 12 months to build the B-52. I had to take a number of rests from the project. The problems resulting from its sheer size in a workshop accustomed to sensible scale aircraft caused me almost insurmountable frustration!

"After a lot of nagging from flying friends, I finally found the impetus to finish the airframe. Covering the monster required 20 meters of Solarfilm. The plane took a month of solid work to cover and decorate. Never again!

"The B-52 sports a striking Dayglo orange and silver color scheme, a variant which was used to carry aloft the X-15 test space vehicle for a launch from 42,000 feet. The X-15, a rocket-powered craft, achieved an amazing speed of 4,520 mph – Mach 6.7! I have already produced the basic foam components for an X-15, and I also intend to emulate the full-size launch technique, which should be good for a laugh!

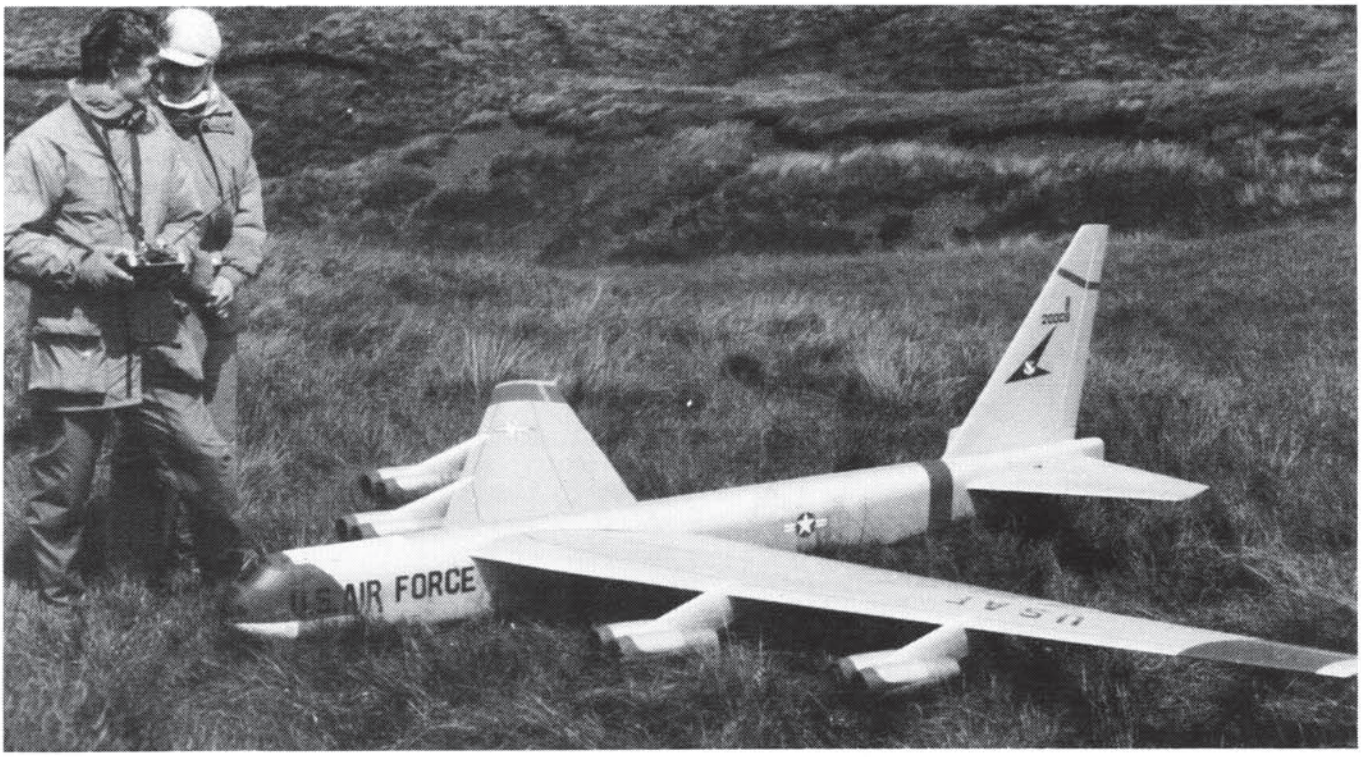
"Having carried out the list of preflight checks, I didn't have any more excuses not to fly..."

"Even with a stretched wing and lifting-body fuselage, I don't expect the X-15 will be capable of more than a couple of fast passes, circuit and landing. And that's from a 1,000-foot launch!"

"IT LIVES!" – Dr. Frankenstein.

"At the crack of dawn on a clear Saturday morning, Steve Belshaw and I sneaked up to the slope before our other club members arrived. Two other invited helpers were due to help, launch, video and photograph.

"Having carried out the list of preflight checks, I didn't have any more excuses not to fly except that our two compatriots hadn't rolled up. Steve



OK, Simon. Ready, yet? Want me to toss 'er over? Simon...?
Remember the nervous moments of any first flight? Now pretend it's this monster that you're about to drop over the cliff after 12 months of building. Well, you needn't pretend any longer. The B-52 is available in kit form.

decided that he was up to a one-man launch, he being the impatient type. So, I thought, if he insists on giving himself a hernia...fine!

"The wind speed was only 10-15 mph but smooth and steady, so Steve didn't have much trouble positioning up into the wind on his own. He had one hand steadying a leading edge and the full weight of the beast—23 pounds—sitting on his other hand. I was glad to be on the tranny end!

"Before Steve had taken three strides, the B-52 left his hands and flew up and out as if on rails, to our dumbfounded amazement. Perfectly in trim, the monster steamed up like a train, penetrating well into the lift. What a magnificent sight to behold! The amount of sky consumed by its sheer volume and by its scything passes along the slope was simply stunning.

"The B-52 required only aileron and elevator to guide her around, which is just as well because the rudder had very little effect! The enormous flaps are tremendously efficient. Setting them at 10-20° created instant height gain without any noticeable pitch change. I used full flap a few times to dive down from a cruising height of 300-400 feet, an altitude the B-52 seemed to attain through none of my doing.

"I didn't plan any foolish maneuvers on the maiden flight. The satisfaction of simply soaring was reward enough and made all the effort worthwhile.

"Having dived from 300 feet against the flaps down to 30 feet, the elevators started to flutter. The violence was such that it sheared a threaded rod..."

"The flight was not without incident, however. After 20 minutes of flying beyond the camera's reach, I decided to do some low, low passes. Having dived from 300 feet against the flaps down to 30 feet, the elevators started to flutter. The violence was such that it sheared a threaded rod (as I discovered in the post mortem), and although I recovered from this alarming situation, there was no elevator control. The B-52 then pitched down at about 45° and hit the deck.

"Under normal conditions, it would have survived, as the gradient of the hill was 35° and covered with heather. I even leveled the wings. I was very unlucky. The only obstacles on the slope for 400 yards were a fence beside a cluster of rocks. It hit them both.

"The damage was extensive, but the flight was so exhilarating that I set to repairing the B-52 straight away."

The PSSA newsletter reports that since this maiden flight, Mr. Cocker has repaired the B-52 and flown it on several occasions.

I'll stop writing here to leave enough room for the photo, caption and B-52 "Dimensions" chart.

Comments? More information on power-scale soaring? Write! Let us know. Thanks!

DIMENSIONS

Wing span ..... 153"
Root chord ..... 26"
Wing area ..... 20 sq. ft.
Fuselage length ..... 10'2"
Weight ..... 23 lb.
Wing loading ..... 18.4 oz./sq. ft.
Airfoil ..... Eppler 205

Simon Cocker, Skytime Soarers,
67 Peel Street, MacClesfield,
Cheshire SK11 8BL, ENGLAND

Practical Vacuum Forming

Part One

By Harry Finch

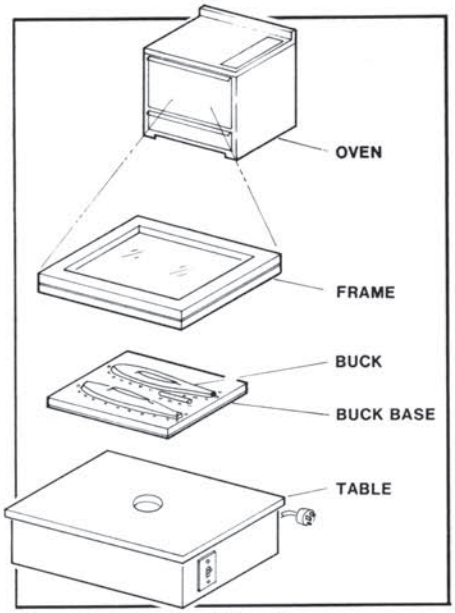
Vacuum forming is a wonderful process. It allows the home modeler to make a wide variety of plastic parts, from small, clear bubble canopies to full-size, almost-unbreakable styrene fuselages.

In this series of three articles, we'll describe how to do the following:

- Build a practical, inexpensive vacuum-forming machine.
- Make the tooling or "buck" to shape your part.
- Produce your first part, step-by-step, in exacting detail.

The basic method and vacuum source are like the ones used by some big plastic sign companies to form huge sign faces from 1/4-inch-thick sheet plastic. Believe it or not, our vacuum source is a vacuum cleaner motor. That's right, folks, just like the one in your shop vac.

The use of plastic materials in model making is commonplace and widely accepted. Many thermoplastic materials are available in sheet form at local industrial suppliers. We'll discuss the specific types, but first let's build our vacuum-forming machine and tooling.



Keep It Simple, Stupid.
The K.I.S.S. principle applies to Harry Finch's homemade vacuum-forming system. All the parts can be found at an average yard sale or easily fabricated. Yet this simple setup lets you form space-age plastics into beautiful, compound-curved slope-glider

The key word is "thermoplastic." It means that the material can be heated to a temperature well within the range of a normal home baking oven, forced into a desired shape, then cooled to retain the new shape.

K.I.S.S. It

The basic setup includes a vacuum-forming table, a buck base (to which you attach the mold or "buck" and a frame to hold the plastic sheet when you heat it. What we have here, folks, is a very simple approach to what can otherwise be a very complex and expensive process. In other words, an application of the time-proven K.I.S.S. principle: Keep It Simple, Stupid.

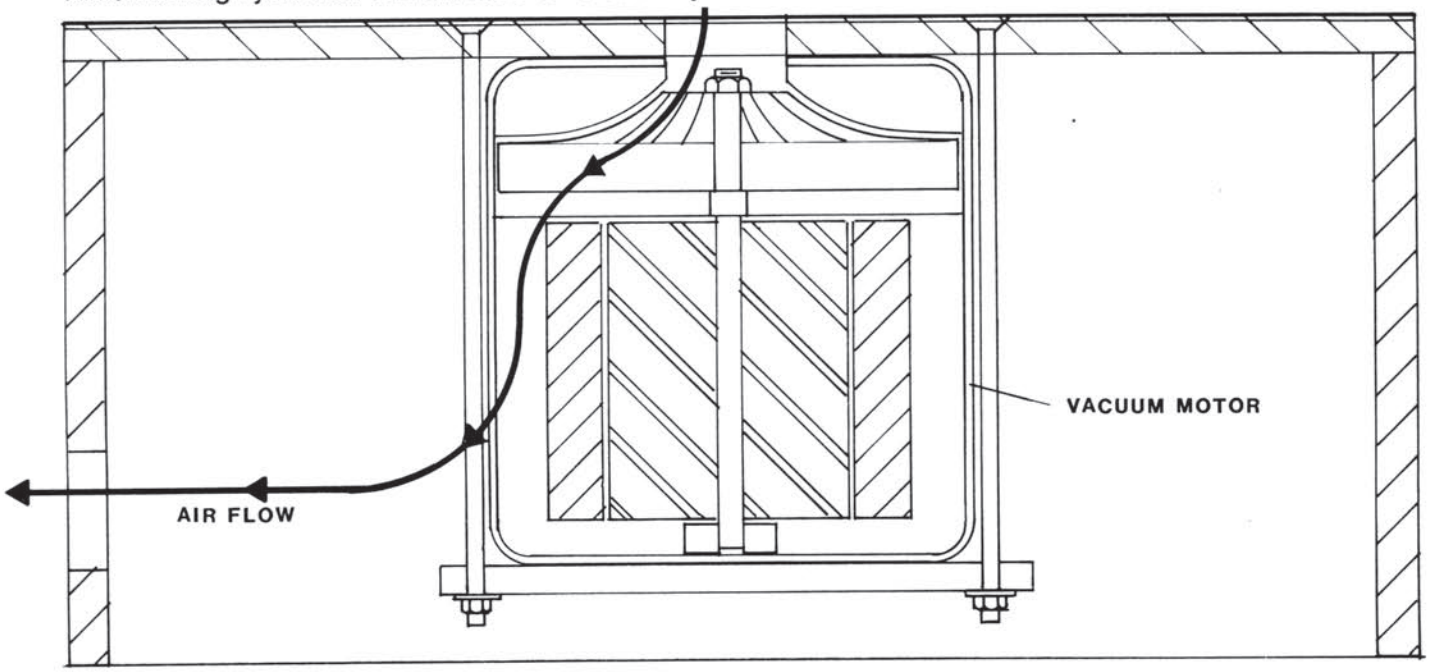
Take a bit of time at this point and do some serious thinking about the parts you may want to form. Consider the size of the parts and the type of material. The size is limited by the size of your oven and table. Unless you want to construct your own special oven (which may not be too difficult), you will be limited to making parts of only moderate size. We can make hundreds of parts within the size range of a kitchen oven, so don't be put off by the size question unless you want to make a size-XL glider. If you do, you'll need to build a larger oven.

Let's run through the construction of the vacuum table, the heart of our system. It's simple, but it requires the following important characteristics: a strong vacuum motor, a very flat, smooth table surface and complete enclosure of all electrical wiring.

Motor-vation

You should be able to find an old vacuum motor quite easily. Go to garage and yard sales, the Goodwill

Box that sucker.
Airflow through your new vacuum table is indicated by the arrowed line. Its construction is kid stuff for a modeler.



stores or thrift shops, even auctions. Look at the specification plate on the vacuum motor you find and check the amperage. It should be at least eight amperes. The higher the rating, the better.

There are many vacuum-motor configurations available. When you're looking for your motor, keep in mind that you need to be able to mount the suction end of the motor to the underside of your table.

Setting the Table

The table size should be at least six inches longer than the largest part you want to form. A length of about 30" by 18" should be about minimum. I suggest that you find a piece of Formica-covered countertop material. Many lumber yards have sink cutouts. They're perfect for your purpose and the price is right (like free). You'll need an appropriate on-off switch and a wall plug. Be sure that the switch has a rating that meets or exceeds the motor amperage and that it has a full enclosure for electrical safety.

The assembly of the vacuum motor and table is critical. Measure the diameter of the venturi on the motor and bore a hole of equal diameter in the center of your table. It'll probably be about 1-1/2" or 2" in diameter.

We want to mount the motor venturi as directly and closely as possible to the bottom of the table center hole. By keeping this connection close and absolutely airtight, you will ensure that the vacuum applied to the bottom of the tooling will be maximum. Any leaks, and you'll lose effectiveness.

Depending on the configuration of your particular motor, you may have to fashion an adapter collar between the motor and table to get a proper seal. In all cases, make a gasket and/or use Permatex or RTV silicone (bathtub caulk) to seal the motor to the table. Bolt the motor to the bottom of the table securely with suitable hardware.

The accompanying drawing shows how the air should flow beneath your table. Bore several airflow holes, each equal to the venturi diameter. You don't want to create any pressure under the table.

In our next installment, we'll work on the frame to hold our plastic material and the "buck," the mold that actually forms our part.

This three-part vacuum-forming series originally appeared in R/C Soaring Digest. Thanks to Jim Gray for his cooperation and assistance in providing Harry's original drawings.

S.O.S.!

Save Our Slopes!

Are you flying at an endangered site? Is it a situation where letters from responsible citizens could influence the decisions concerning your site's future? Then tell us about it. Write to Slope Soaring News, S.O.S., 2601 E. 19th St., #29, Signal Hill, CA 90804.

HELP!

Are you a skilled, meticulous model builder?
Are you an experienced slope pilot?
Are you located reasonably close to Signal Hill?

If so, *Slope Soaring News* needs your help. We'd like to be able to build and test slope-glider kits, but with our limited staff, we just don't have the time. So, we're looking for a few good modelers who would be willing to take a kit, build it exactly to manufacturer's specs, take it out and test fly it and then give our writers some objective input.

We need to know about the quality of the kit, if it came with good instructions, if you had any problems with it, how it performs... You know, all the things you yourself would want to know about a kit before you buy it.

Your comments, pictures of the kit you built and pictures of you flying it would be included in the story. We can't offer financial reimbursement for your work, just a certain amount of semi-fame and near-notoriety within the slope-soaring community as part of the SSN testing team.

Thanks, as always, for your support!

Scraps...

Greg Gentry's a regular at Long Beach and Point Fermin. And he carries a pack of *Slope Soaring News* with him where ever he goes...

SSN SLOPE REPS

Meet Greg Gentry. Greg's our first *SSN* Slope Rep, and he carries a stack of the latest issues with him at all times. He also keeps an eye out for new planes and ideas, and then he passes the information along to our editors for possible use in *SSN*.

While our success in getting your favorite hobby dealer to sell *SSN* has been marginal to say the least, our flying buddies are coming through. Up at Point A, for example, Bob Andrews has agreed to distribute the newsletter. As others join, we'll print their names - and photos, if we have them, so you'll know who's who.

Is there an *SSN* Slope Rep at your local hill? We're looking for dedicated fliers, good guys who spend a lot of time at their favorite local slope, to help us sell *SSN* and act as our representatives for their flying buddies.

Interested? Write or phone Charlie Morey at Slope Soaring News, 2601 E. 19th St., #29, Signal Hill, CA 90804, 213/494-3712.

THE LADY IS A PILOT

Go to Long Beach or Point Fermin, and you're likely to meet Les and Sharon Green. While Les is the original slope soaring instigator in the Green household, Sharon has taken up the hobby, too. And she's spending almost at much time at the sticks of their Wanderer, Gnome, Shadow and P-51 as Les.

We'd like to see more wives and "significant others" joining in on the fun at the slopes. What's the secret, Les? Sharon? Anybody?

SLOPE SCALE UPDATE

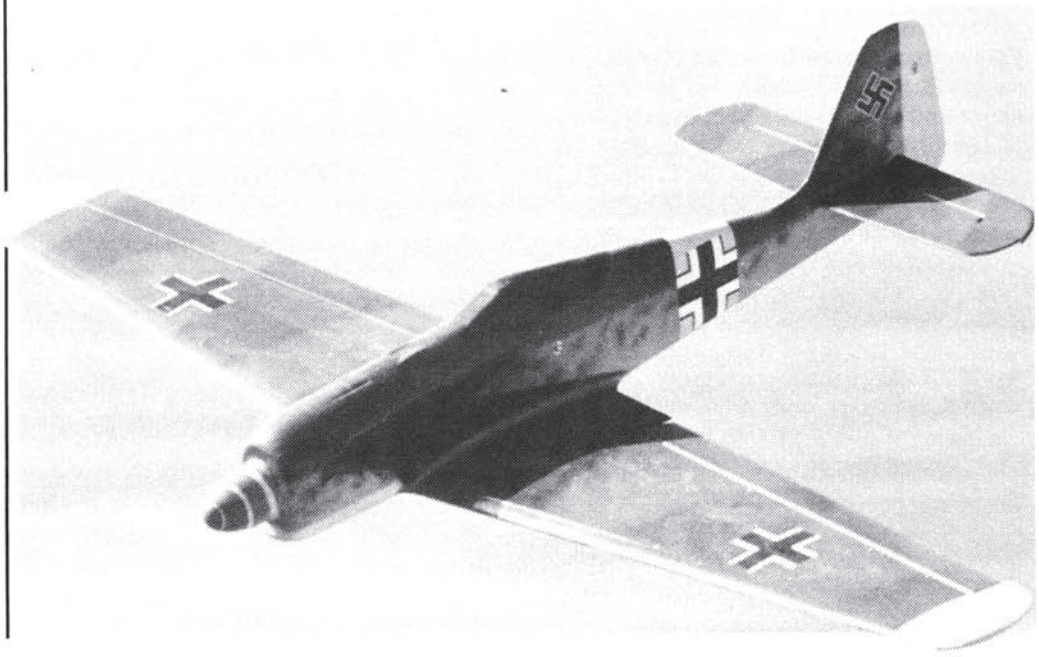
Paul Masura and Brian Laird of Slope Scale have added a new plane to their hangar of WWII Warbirds, a Gary Kawamura-designed Fokke-Wulf 190. The guys have also updated their planes with a very significant improvement: one-piece fuselages. You'll no longer be required to mate the two halves yourself. The Fokke-Wulf includes an instruction sheet and full-size plans. Half-size drawings still appear in the P-63 King Cobra and Messerschmitt kits, but their fuselages are now being assembled for you, too.

Meet Sharon Green. Sharing slope planes with husband Les.

Remember the various rumors about Slope Scale's P-51 Mustang kit? The one about the fuselage being too difficult to produce is true. Brian and Paul are now working on a new, left-side/right-side mold, rather then their typical top/bottom format. Masura says they'll have a P-51 ready in a couple months.

Slope Scale kits are available exclusively through Chuck's Model Shop in Hawthorne.

Mustang pilots beware!
There's a new warbird at Bluff Cove, and it's hungry. Slope Scale's new Fokke-Wulf.



...bits and pieces from the world of slope soaring

OUR FAVORITE DEALERS

We recommend you do your hobby shopping at the following *Slope Soaring News* dealers.

Wilshire Model Center
2836 Santa Monica Blvd.
Santa Monica, CA 90404
213/828-9362.

Chuck's Model Shop
14005 Hawthorne Blvd.
Hawthorne, CA 90250
213/644-5000.

California Model Supply
1064 S. Brookhurst Road
Fullerton, CA 92633
714/871-0616

West Coast Hobbies
4690 Convoy St., #108
San Diego, CA 92111
619/569-9633

Covina Hobby Center
140 North Citrus Ave.
Covina, CA 91723
818/331-1910

Please mention *SSN* when you call or visit. Thanks!

INTERNATIONAL SLOPE RACE CANCELLED

The South Bay Soaring Society's International Slope Race, scheduled for October 22-23 (as announced in last month's issue), was cancelled.

On Thursday before the event, we phoned C.D. George Paige to inquire about hotel accommodations and left a message on his answering machine. Our next call went to Bob Ratzlaff who informed us that the contest had been cancelled. Mr. Paige still hasn't returned our call, so we can't tell you why the event did not take place.

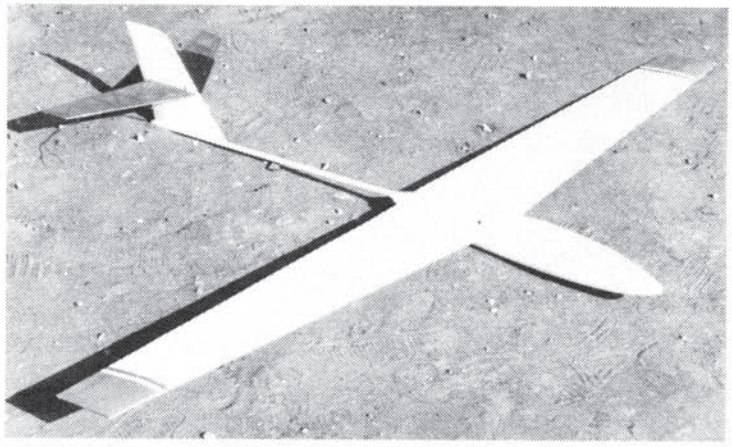
Too bad. We'd planned to give you extensive coverage of the ISR in this issue. Maybe next year...

MINIRACER

Armand De Weese is at it again! Every time he shows up at Long Beach, we all go sauntering over to see what beautiful little gem of an airplane he's brought to test. This time, it's his new one-meter slope racer.

What? You didn't know there was a one-meter class? You're right. There isn't. But finely crafted, comparatively inexpensive sailplanes like this one are a good reason to start one. They're easier to transport than their 11-pound big brothers.

Is this an idea whose time has come? Anyone else bulding miniracers?

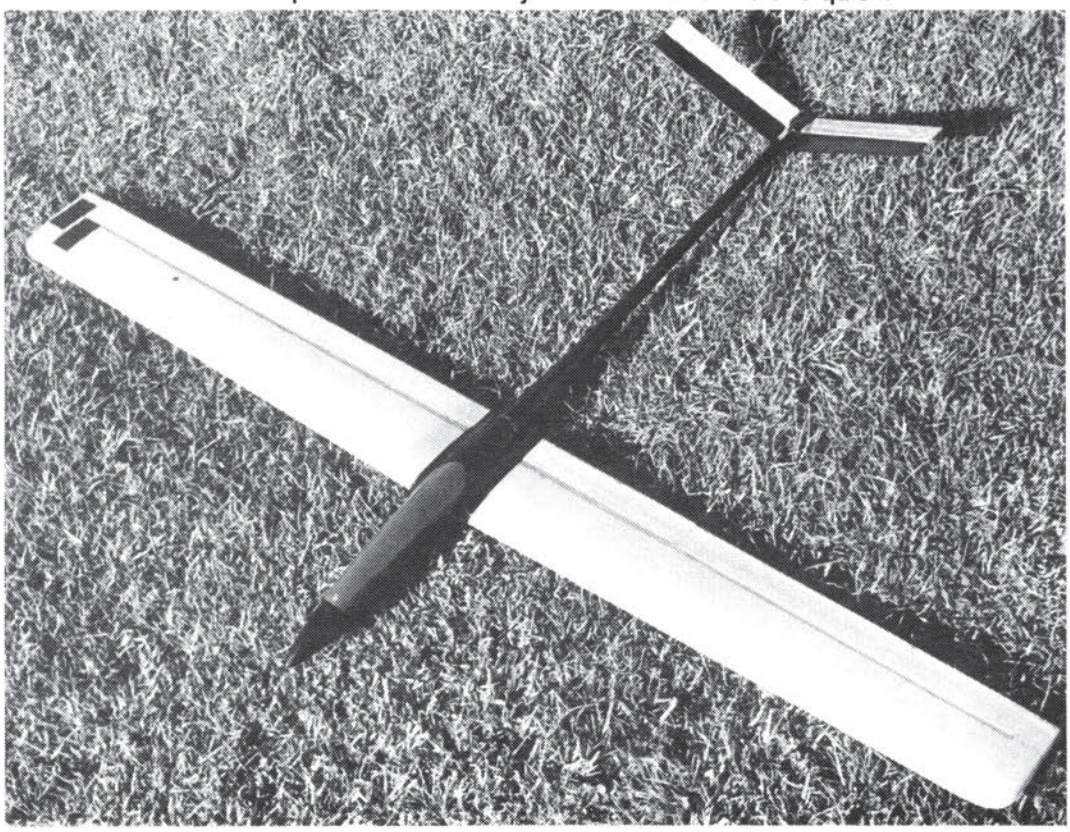


Gary Kawamura's 42" wingeron pod-and-boomer. Taking a break from the Bluff Cove warbirds.

BABY BOOMER

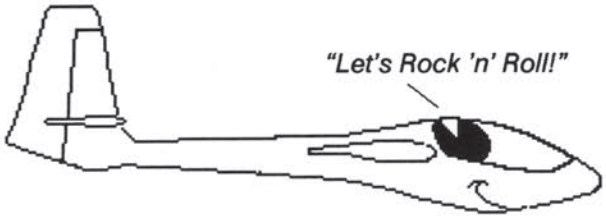
Gary Kawamura took a break from designing the typical Bluff Cove power scalers and built this very slippery-looking pod-and-boomer. The pod is formed from fiberglass, and the boom is a fiberglass push-rod. It's a wingeron design with the slope soarer's favorite airfoil, a modified Eppler 374. The wingspan is 42", and like most of its kind, it's extremely aerobatic and pretty fast, too!

A One-Meter Slope Racing class?
Armand De Weese is ready. But will he find challengers? Jack Chambers airfoils—a 20 at the root and a 13 at the tip—and an unusually-flat V-tail make this one quick!



The Aerobatic Adventures of Tipstall Wingover, III

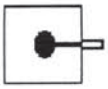
Part Two: The Basic Roll



Step 1

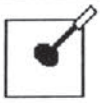
Get lots of altitude. Push the stick forward, build up enough speed to complete the roll, then pull back slightly to level or climbing flight.

Step 2

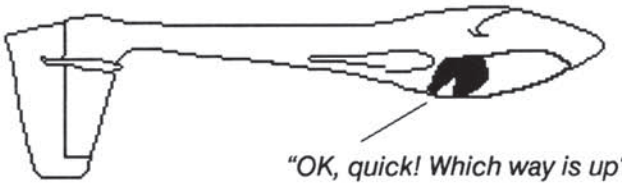


Move the stick to the side to start your roll. There is a huge difference in the way different planes will react to your attempted roll, so be prepared for anything, even success. Rudder planes will usually not roll as readily as aileron ships, but that doesn't mean it can't be done.

Step 3

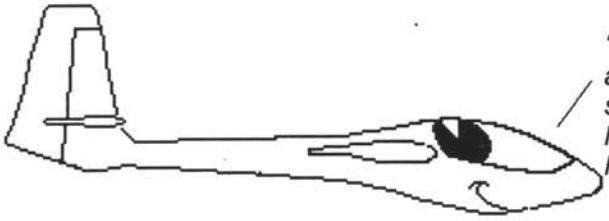


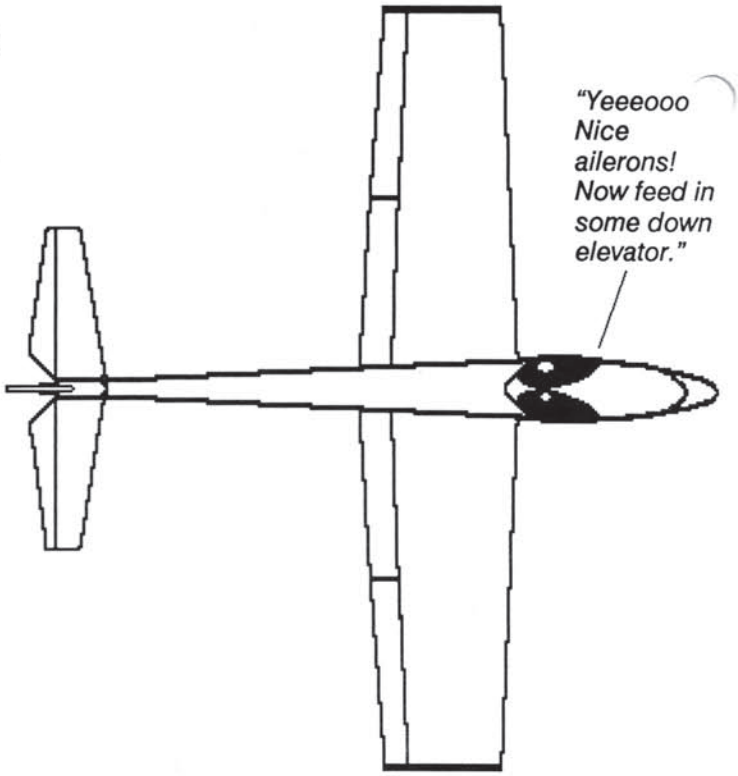
As the plane gets up to a knife-edge position, feed in some down-elevator, keeping the side-stick constant. Rudder planes seem to need lots of "down" to kick them over into inverted flight. Some aileron planes don't need any at all to perform a nice roll.

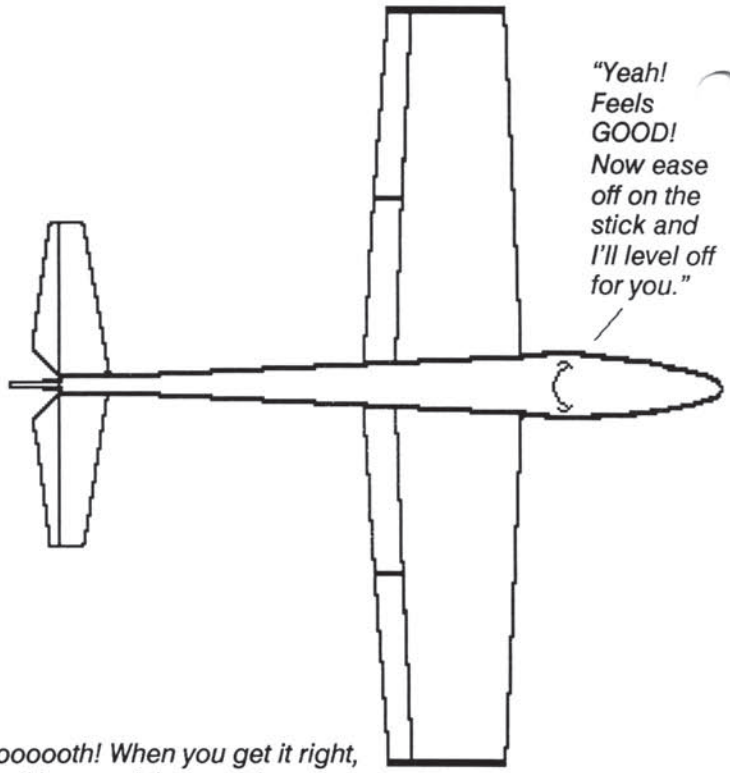


Step 4

As the plane completes the roll, returning to right-side-up flight, center the stick.







AMA MEMBERSHIP SIGN-UP FORM

Provided Courtesy of Slope Soaring News

Please fill out this form completely. An incomplete form will delay the processing of your membership.

Date ___/___/___

Name_____ Date of Birth_____

Address_____ MasterCard or Visa _____

City_____ Card number_____

State_____ Zip Code_____ Expiration date_____

Date of birth___/___/___

Is this a New membership, or a Renewal:_____ If Renewal, enter your AMA Number:_____

MEMBERSHIP CATEGORIES: Enter one of the following categories below.

• If you are 19 or over by July 1, select one of these categories:

OPEN FULL MEMBERSHIP: $40. Includes all competition privileges, liability and accident/medical insurance, and subscription to Model Aviation Magazine.

OPEN LIMITED MEMBERSHIP: $36. Same as above, except only "AMA News" section from Model Aviation Magazine.

EXTRA FAMILY MEMBERSHIP: $20. For second adult in immediate family, same address. No publication. One family member must join as Open Full; include this member's number with application.

SPECIAL SENIOR CITIZEN RATE: $21. For age 65 and over. You must submit proof of age by mail the first time you apply for this rate.

• If you are not 19 by July 1, :

YOUTH FULL: $16.00. Same privileges as Open Full.

Your membership category:_____

Your main interest (CL, FF, RC, Indoor, Scale, All) SLOPE SOARING

Do you want an FAI stamp ($10, required for international competition): _____

Do you want an FAI Booster Stamp ($5 contribution to FAI Teams): _____

Would you like information on the AMA Museum Patron Program? _____

Total membership payment enclosed: $_____

Thank you very much. Your coverage becomes effective when this application is received at AMA Headquarters.

Academy of Model Aeronautics, 1810 Samuel Morse Drive, Reston, VA 22090, 703/435-0750

Air Mail

NEW KITS COMING

I am still doing my slope soaring column in *Model Aviation*. Since it only appears every other month, and my month happened to land on the Nats issue, it has been quite a while since it's been in the magazine. The column will be back next issue (January). Thanks for the concern.

As far as my slope kits are concerned, things are on hold for a while. I was originally kitting the Scimitar and Mariah with traditional built-up construction.

I have now made a few minor changes to both designs. The Scimitar will now be known as the Scimitar RS (Race Special) and will feature a fiberglass fuse and glassed foam wings. I've been playing around with some custom reflex airfoils and have found a couple that show great promise (and speed!). The Mariah has been enlarged about 50%, and it will also feature a fiberglass fuse and foam-core wings.

As soon as I get close to having the kits available again, I'll send you some photos and info.

Mark Triebes
Saratoga, CA

We missed Mark's column in MA and wrote him a letter to inquire about both the column and the kits. Thanks, Mark! – Charlie

KITE HILL CORRECTION

You made a couple mistakes in your Kite Hill story last issue.

In the directions, you said to exit off I-405. It should have said I-5. Instead of writing directions, why not show a simple map instead?

You didn't mention that Kite Hill also offers excellent flying on its back side during Santa Ana wind conditions.

Dick Vader
Los Alamitos, CA

You're right, Dick. We apologize. I wrote those directions hurriedly, and in my haste, I led you all onto the wrong SoCal freeway. We've included a map with this month's Long Beach site article. Our "Site of the Month" stories are usually written after one or two visits. We just didn't realize that Kite Hill offered good Santa Ana wind flying. But now that we do, you know where we'll be headed next time the wind comes from the "wrong" direction! See you there? – Charlie

Want Ads

THE FRENCH FLYER

Sensational easy-to-fly 36" wingeron. Complete with two standard servos. Only 16 oz. ready to fly. $85. (2-4 channel receiver required.) Greg French 213/597-6346. (10-11/88)

CANNON MICRO SYSTEM

Four-channel Cannon micro Tx, two-channel micro Rx, two micro servos. No battery pack or wiring harness. Transmitter pot needs cleaning or repair(?). $150, as is. Charlie Morey, 213/494-3712

YOUR WANT AD HERE!

SSN Want-Ad rates
Per word charge - 25 cents.
Minimum charge - $5.00
Bold Headline* - $1.00
Total the amount, then multiply times number of issues ad will run.
(*20 characters maximum)

Slope Soaring News
2601 E. 19th Street, #29, Signal Hill, CA 90804

FIRST CLASS MAIL!

PRINTED MATTER

Coming Soon in Slope Soaring News!

Check it out!
All The News From California's Finest Slope Sites!
Learn All About Advanced Radio Techniques!
High-Performance, High-Tech Slope Ships!
How To Build A Fiberglass Fuselage!
Vacuum Forming Process Shown!
Wing Bagging Explained!
Building Techniques!
Scale Sailplanes!
Combat!
Fun!
!
(pssst...only $15.95 a year.)

Name _____ Age ____ Male ___ Female ___

Address _____ No. of planes owned ___ No. of radios? ___

City _____ State ____ Zip code _____

I'm interested in ___ Building techniques ___ Flying techniques ___ Planes and the people who design them
___ Scale sailplanes ___ Combat ___ Power scale ___ F3B-style planes
___ Other? _____

Mail to Slope Soaring News, 2601 E. 19th St., #29, Signal Hill, CA 90804. Check or money order only, please.
PLEASE MAKE CHECKS PAYABLE TO "CHARLES MOREY," NOT "SLOPE SOARING NEWS." THANKS!