

# Scale Slope Soaring!

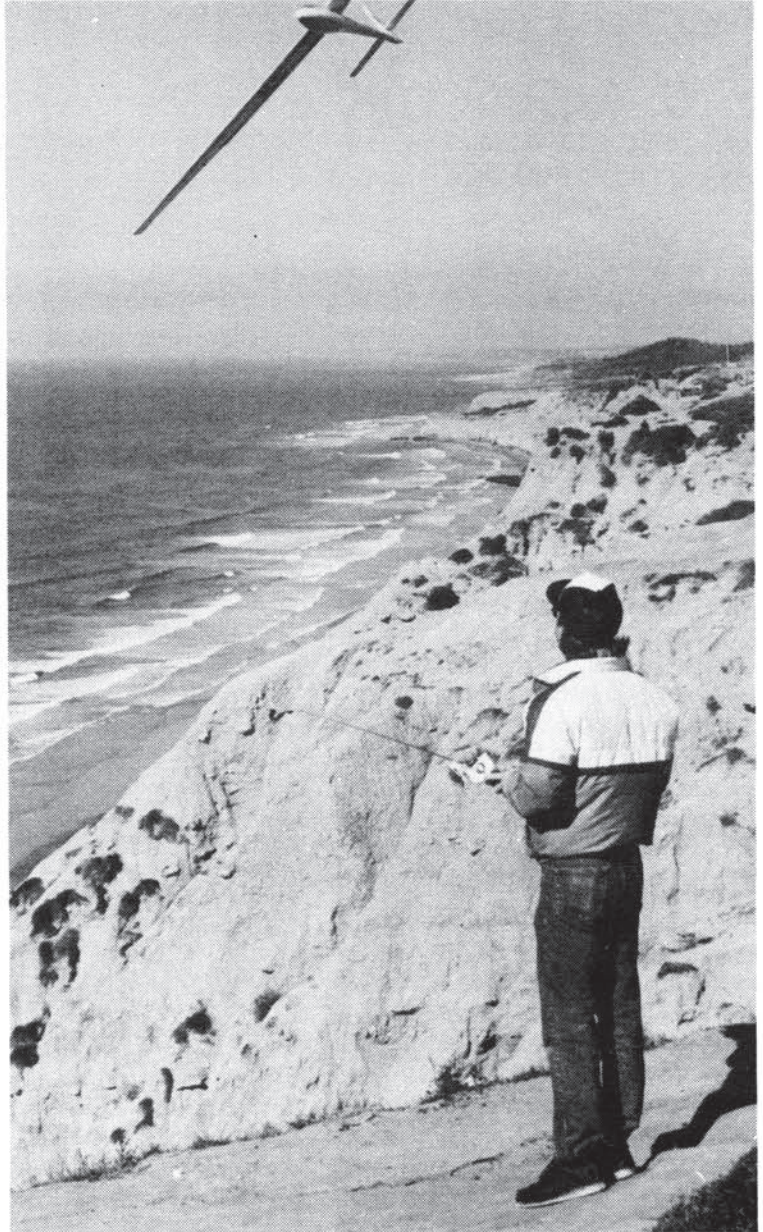
Spectacular Appearance, Breathtaking Performance.  
What More Could You Ask For?

# Slope Soaring News

Vol. 1, No. 5

January 1989

\$1.50



**PLUS: Still Flying on "Illegal" Color/White Frequencies? You're Shooting Down Fliers on 14, 18, 22, 26, 30 & 58! • Mike Reed's Hot New Slopar • Flying at Montaña de Oro • How to Vacuum Form Plastic, Part 3 • Hi-Tech Products from Hi Performance Sailplanes • Wilshire Models Closes Shop!**



# Wingin' It

## THINKING BIG

I'm starting a few new projects. Two of them are sailplanes, one's another newsletter for an organization that may interest you.

Oh, by the way, the photos here have nothing to do with any of the projects. Marcie gave me a full-scale sailplane ride for my birthday. That was last April, and it took us until December to fit it into our schedule. But it's an excuse

like real performers. They're built in typical German style with fiberglass fuselage and sheeted-foam flying surfaces, yet they're manufactured in Santa Monica.

The Flair comes in three styles and features a choice of three airfoils: Eppler 205, Eppler 374 or Quabek 1.5/9. I've ordered the Quabek in full F3B configuration: 3.2-meter wing sheeted with hardwood veneer and rudder, elevator, ailerons and flaps for control surfaces.



**No, we're not thinking this big...**  
...but Marcie and Charlie sure had fun doin' it full-scale!

to get a picture of the man who's usually behind the camera (me) into the newsletter, and we did a bit of "real" slope soaring, so what the heck.

Back to the projects: The sailplanes are unusual for me. They're both pretty big, and as you may know from reading this column, I generally fly little 40-50" wingspan Long-Beach-style ships.

### Flying with Flair

I'm finally getting one of Vince Parizek's Flairs. Vince was featured in issue number one, and his Flairs—available in several configurations—look

The Flair is also available in slope racer and sport models. The basic sport model offers an Eppler 205 in a 2.5-meter span. The slope racer comes with your choice of E-205, E-374 or HQ 1.5/9 airfoils, your choice of 2.8- or 3.0-meter span and air brakes rather than flaps or spoilers. You also have your choice of obechi or hardwood veneer wing sheeting.

Vince has literature on all his sailplanes, including several scale sailplanes, at Santa Monica Sailplanes, 2703 Santa Monica Blvd., Santa Monica, CA 90404; 213/828-8700.

**Slope soaring, full-scale!**  
It feels as fun as it looks!



### 86'd by Jet Hangar

Remember Harry Finch's F-86F Sabre featured in our Power Scale Special Issue? Well, it finally got to me. Every time I'd go over to Harry's, there it'd be, hanging on the wall, and I knew it'd be much happier flying high over Point Fermin. I finally got around to asking Harry if he'd sell it. Surprisingly, he agreed, and he offered me a reasonable

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Scale sailplanes offer an ultimate slope soaring experience.

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**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.

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### How's a half-mile of 400-foot slope sound to you?

When you're in the San Luis Obispo area, stop and check it out. Even if you're not in the area, it sure looks as though it's worth the drive!

#### Site of the Month

# MONTAÑA DE ORO STATE PARK

By Campbell MacInnes

If you're from the central California coastal area or are off on vacation to visit Grandma's, Montaña De Oro State Park is a great place to get some substantial flying time.

Montaña De Oro State Park is located on the Pacific coast due west of San Luis Obispo. Whereas several of the previously described areas are located within suburban locales, Montaña De Oro is a state park because of its natural beauty. About 25% of the time I've been there, I have seen deer from the roadway. And what's more beautiful than a 400-foot cliff stretching 1/2 mile away from the launch site?

The traditional glider flying site is located on the north side of Hazard Reef Canyon. There is a large sand dune and rock knoll at the edge of the canyon which is used as the launch site. The majority of the flying takes place north of the knoll along a 400-foot-high bluff (chaparral covered). If you have a glider that is able to transverse an area of dead air, you may also fly across the canyon on the next set of bluffs to the

south.

A word of warning: Make sure you're on the correct bluff. My first time there, I followed the directions I was given and ended up on the south side of the canyon. The flying was fine, but 45 minutes later locals showed up at the north side of the canyon, and no one knew which frequency anyone else was on. I had to repack my gear and walk over to make sure it was safe to fly, and sure enough, we had two channel 40s.

The lift when the wind is blowing is magnificent!! With my glider at Hughes Hill, I'm only able to do three consecutive loops before I'm in danger of getting out of lift, whereas at Montaña De Oro I was able to do five consecutive loops, and I stopped only because I felt like it. If you follow the bigger is better theory with regard to bluffs, Montaña De Oro is BIG.

All places have their problems—Montaña De Oro has excellent visibility except for the immediate section south of the launch site. The rocks stick far enough out that it is possible to put the glider in a place where it may be difficult to see. Another problem is if you crash (Oops, did I say that?) on the southern side of the canyon, you may not be able to get your glider off the cliff.

The final problem is the landing area. The landing area is the chaparral behind the launch site which may be rough on planes. It is possible to land the glider on the launch site (15' x 30'), but

make sure you're not going to cream any other pilots.

For emergency landings, there is the beach immediately below the bluff, but it is far enough away that depth perception may be a problem. Also it is not a particularly wide beach, and the ocean generally has great surf.

Montaña De Oro is recommended for both light rudder/elevator gliders and faster aileron power scalars. The lift extends far enough out away from the bluff so that two tracks may be easily maintained.

Excuses to drive to San Luis Obispo: Morro Rock/Bay, Hearst Castle and Madonna Inn. San Simeon, Pismo Beach and San Luis Obispo are romantic and have lots of cheap motels and campgrounds. Montaña De Oro is a nice park for the rest of the family; you can catch rays from Diablo Canyon Nuclear Power Plant, go wine-tasting locally, and it's on the way to the Bay Area (or SoCal if you're from the Bay Area).

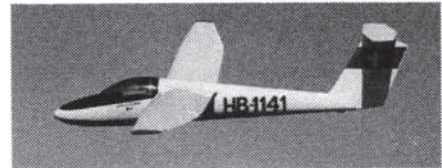
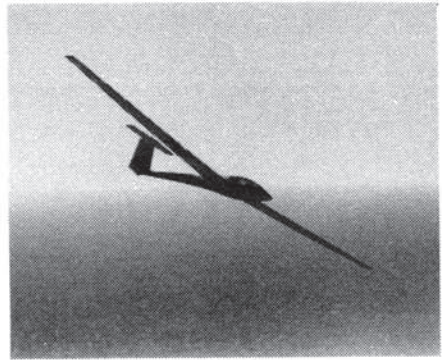
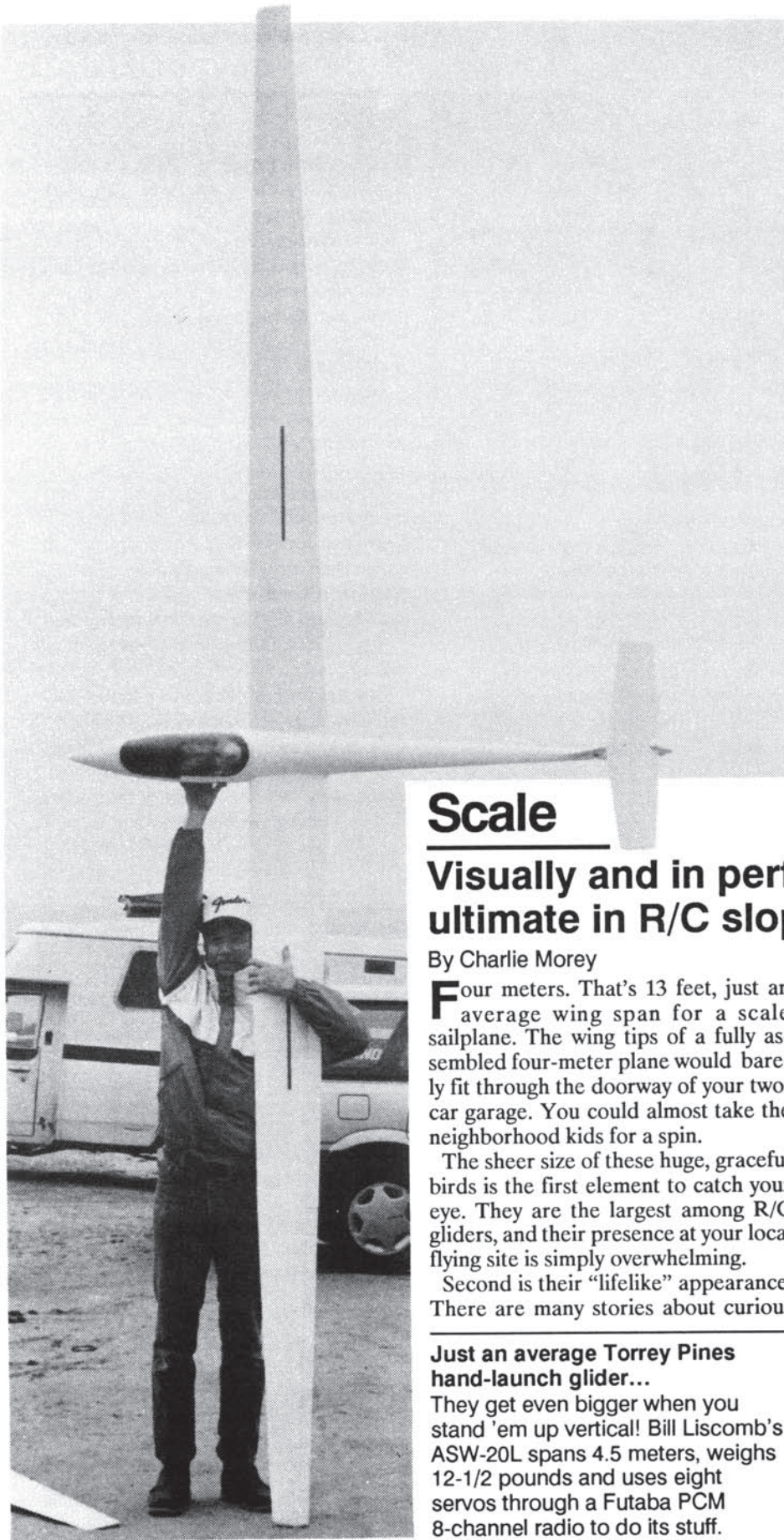
Emergency supplies: SLO Hobbies is the closest hobby store I found, and it's on Los Osos Road in San Luis Obispo. LAWS Hobby and Art Supply is in downtown San Luis Obispo and has a larger overall selection because of its art supplies.



**HOW TO GET THERE:** Locals: Montaña De Oro, Hazard Reef, north side. Visitors: Off the 101, take Los Osos road west through Los Osos directly to Montaña De Oro State Park. From 9th Street in Los Osos, Hazard Reef is 2.5 miles. The parking area is the first eucalyptus-covered hollow in the park—you'll see other cars, especially surfers'. You'll see the Hazard Reef sign as you're walking down the trail. Walk down the canyon towards the coast a little ways and then veer off to your right (north). Keep heading up towards the top of the bluff and you'll find the spot. Reference: Thomas Bros. California Road Atlas & Driver's Guide, p. 75-76., E-3, E-4.







**Scale has something for everyone.**  
 Top: Grace, high-tech sailplane aerodynamics and performance!  
 Center: Authenticity, "real" sailplane appearance. Bottom: Intricate detail to display the master modeler's skill.

## Scale

### Visually and in performance, it's an ultimate in R/C slope soaring!

By Charlie Morey

**F**our meters. That's 13 feet, just an average wing span for a scale sailplane. The wing tips of a fully assembled four-meter plane would barely fit through the doorway of your two-car garage. You could almost take the neighborhood kids for a spin.

The sheer size of these huge, graceful birds is the first element to catch your eye. They are the largest among R/C gliders, and their presence at your local flying site is simply overwhelming.

Second is their "lifelike" appearance. There are many stories about curious

#### Just an average Torrey Pines hand-launch glider...

They get even bigger when you stand 'em up vertical! Bill Liscomb's ASW-20L spans 4.5 meters, weighs 12-1/2 pounds and uses eight servos through a Futaba PCM 8-channel radio to do its stuff.

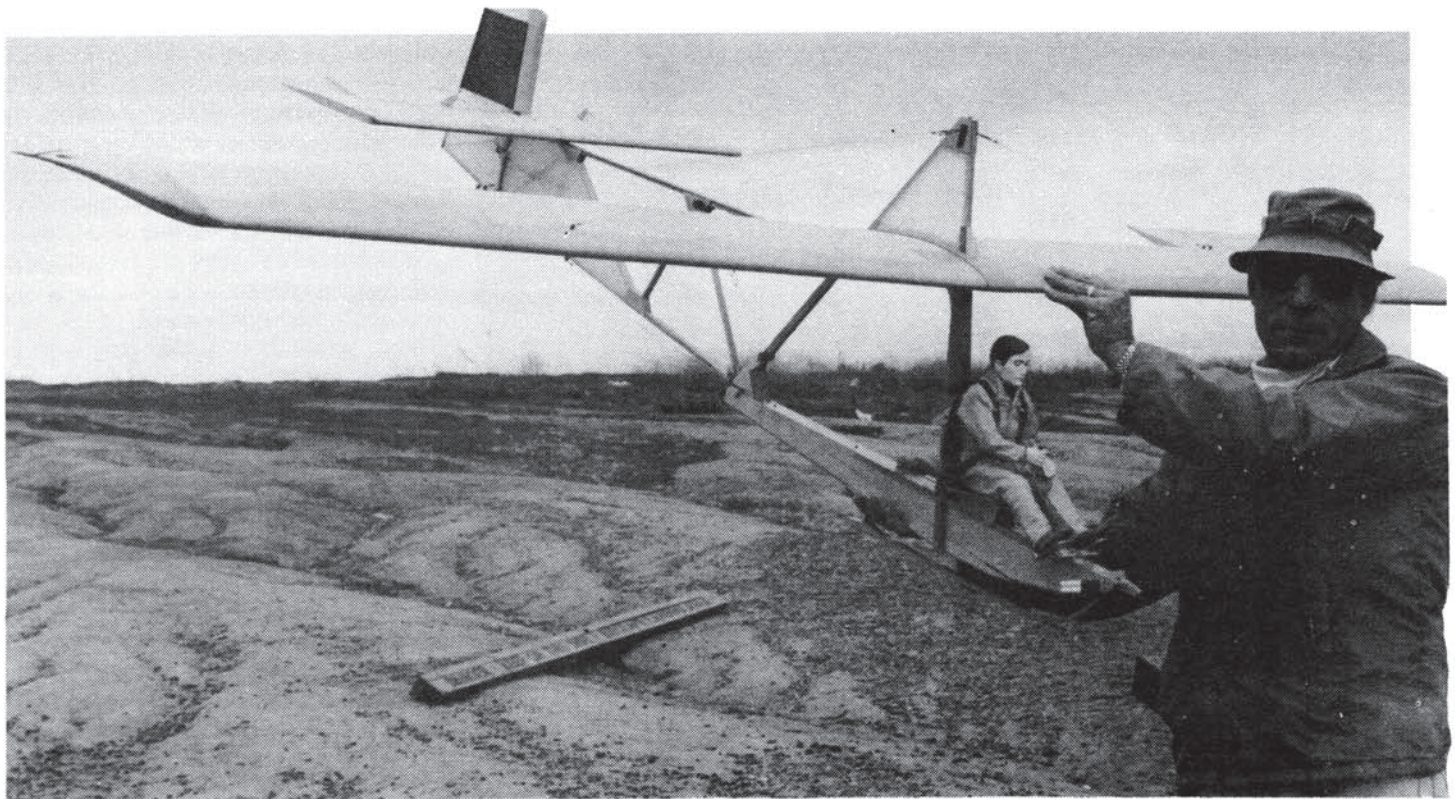
spectators who have spotted the planes from a distance and, upon arriving at the R/C field, have been shocked to learn they'd been watching models rather than full-scale aircraft.

Scale modelers enjoy the joke. There's a very strong sense of pride in creating a scale sailplane, and to trick someone into thinking it's a "real" one is an ultimate compliment to the modeler's craft.

But aside from the obvious—size and scale appearance—there's one more aspect of scale flying that adds a very important element to the hobby—Performance. I must admit, I hadn't considered this third vital element before I spent a weekend at Torrey Pines flying with the Gulls.

Scale sailplanes do much more than simply mimic the appearance of their larger brethren. The same shapes that streamline full-scale sailplanes into motorless rocketships work well at one-





**And then there's vintage (the plane, not Angelo)...**

Angelo Orona is one of the Torrey Pines Gulls' masters. His SG-38 is absolute museum quality. All wires have scale turnbuckles, the pilot has undergone extensive "plastic surgery" to make him look more lifelike, all materials and colors were chosen to match the original full-scale glider perfectly. In short, it's a masterpiece of scale modeling.

quarter or one-third size, too. Full controls—rudder, elevator, ailerons, flaps and spoilers—give the landlocked R/C pilot ultimate control for aerobatics, high-speed runs and realistic landing approaches.

Landings are critical. The size of these monsters, their cost and the safety considerations of landing a 6- to 12-pound sailplane prohibits typical just-stuff-it-in slope-style landings. Long, wide approaches—scale landing patterns—are typical. Dropping the flaps and/or deploying the spoilers at the right point to avoid overshooting or falling short is a new skill for the slope pilot to learn. And finally, drop the gear.

What? Landing gear?

Right. The rule is simple. If the full-scale plane had it, so must the model. Some sailplanes have faired-in solidly mounted wheels, some have retracts. Watching as an R/C sailplane pops open the doors and lowers the single landing wheel is another scale-pilot joke that always brings smiles and exclamations, especially when it's done unannounced.

Another maneuver that draws gasps is the speed run. The outright speed and

**I WANT ONE!**

If you're going to be ready in time for the May 26-28 Tri-City Soarers Scale Fun Fly, you'd better start building right now.

Where do you find scale sailplane kits? Most of them are imports. Manufacturers like Multiplex, Graupner, Roebbers, Rowing, Krick and Robbe offer a variety of models to choose from. There are a few domestic ones, though, and we've included a few sources.

Dealers and manufacturers, if scale sailplanes are one of your specialties, let us know, and we'll mention you, too.

**American Sailplane Designs**  
2626 Coronado Ave., #89  
San Diego, CA 92154  
619/429-8281

**Beemer R/C West Distributors (Multiplex)**  
7725 E. Redfield Rd.  
Scottsdale, AZ 85260  
602/483-9577

**Hobby Lobby International (Graupner, Krick vintage)**  
5614 Franklin Pike Circle  
Brentwood, TN 37027  
615/373-1444

**Robbe Modelsport**  
180 Township Line Road  
Belle Mead, NJ 08502  
201/359-2115

**Santa Monica Sailplanes**  
2703 Santa Monica Blvd.  
Santa Monica, CA 90404  
213/828-8700

**Viking Models USA**  
2026 Spring Lake Dr.  
Martinez, CA 94553  
415/689-0766

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

Please mention *Slope Soaring News*. Thanks!





### Trés Amigos.

Joe Souza, Larry Fogel, Sal Peluso...and a total wing span of about 45 feet!

the quarter-scale "whoosh!" that the big planes deliver is very impressive indeed!

Aerobatics? No problem. And yes, watching a 13-foot plane perform a slow-motion, scale-like hammerhead, loop or roll is just not the same as seeing a little non-scale aileron model do the

same trick. It has almost the same impact as watching a full-scale pilot perform only 100-feet off the deck. Impressive, to say the very least.

On the other end of the performance scale (no pun intended), there's the surprising light-lift capabilities of the big birds. One pilot claimed his plane

would outfly a Wanderer in light lift. He may (or may not, I'm not sure) have been exaggerating, but not by much.

The scale planes don't pop up into the air like the lightweight polyhedral floaters. Their wing loading is much too heavy for that. They use their sophisticated airfoils and low-drag characteristics, making passes back and forth to work their way up to and beyond the heights attainable by the polyhedral ships just as a (you guessed it) full-scale sailplane would.

To me, building a scale sailplane or a power scale glider seems like the next step in a logical progression. First, you learn to fly with a polyhedral rudder/elevator glider. Then the precision of aileron control and a need for increased performance draws the slope soaring enthusiast into an aileron trainer. The need for speed lures him into the next step, a higher-performance sailplane that doesn't limit his growing flying skills. And finally, the added visual touch of creating a high-performance sailplane that performs well and looks like a full-scale aircraft takes him to an ultimate in R/C soaring: Scale.



## SCALE HAPPENINGS

So, you're curious? Want to go check out these scale sailplanes? Here are a few opportunities.

### Torrey Pines

Torrey Pines is an excellent flying site, the best I've visited in Southern California. The 350-foot cliff and ample landing area make it especially suitable for larger planes.

The presence of a club like the Torrey Pines Gulls makes it the SoCal place to go watch scale sailplanes perform on any good flying weekend.

Torrey Pines is just north of San Diego. Take the Genesee exit off I-5 and head toward the ocean. There's a traffic light at the top of the hill; go straight through the intersection. Watch for the gliderport sign on the right and turn right into the park.

### Scale Events

There are only a few West Coast scale soaring events currently on the calendar, and one of them is tenta-

tive, but for now this is it.

### Tri-City Soarers Scale Fun Fly

I've listened to enough stories and watched enough video tapes of the 1988 Tri-City Soarers' Scale Fun Fly to realize that going to the May 26-28, 1989, event is a must! Contest Director Wil Byers and the club put together a very impressive first-time event last year, and all indications are that it'll be even bigger and better the second time around.

Held at Eagle Butte near Richland, Washington, the event provided superb flying conditions for both scale and power scale gliders. Everyone I've talked to who participated in the '88 event is planning to return.

As a reader service, I'll print car-pool information for those who are going and are willing to share a ride (and expenses) with other modelers. Call or write SSN with that information, and I'll pass it on to our readers.

For more information, contact CD Wil Byers, Tri-City Soarers, 632 Meadows Drive East, Richland, WA

99352; 509/627-5224. (Please mention *Slope Soaring News*. Thanks!)

### The AMA Nats

The Academy of Model Aviation Nationals are also being held in the Tri-City area of Washington this year, and for the first time, slope soaring is included on the agenda. It's my understanding that it's just a fun fly at this point, but I'll keep updating that information as the date (in July) draws nearer.

It's not specifically a scale event, but there will be scale sailplanes there. Wil Byers is organizing this one, too.

### Torrey Pines Scale Fun Fly

Okay, this is the tentative one. It's no more than a gleam in Gull President Gary Knapp's eye at the moment, but if the Gulls approve the idea, there could be a well-run, national-caliber scale soaring event in Southern California, too. Let's keep our fingers crossed!





## Fly with the Gulls

Looking for a good club to join? It'll be tough to find a better group of guys than the Torrey Pines Gulls. They hold monthly meetings at the Air & Space Museum in San Diego's Balboa Park, and they're a very active club with both thermal and slope flying every weekend. For more information, contact Membership Chairman Joe Souza, c/o Torrey Pines Gulls, P.O. Box 370356, San Diego, CA 92137.

### How many Gulls does it take to launch an RC sailplane?

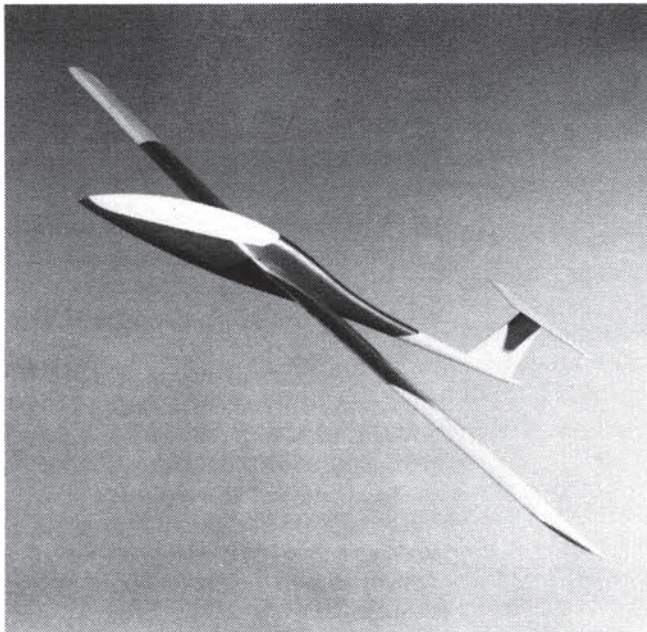
When the sailplane is the size of Sal Peluso's, at least two! When Gary Anderson of American Sailplane Designs finally tosses his 21-1/2-foot ASW-17, it'll probably take three or four!

# rotor

a new concept from **VS sailplanes**

*"... cleverly engineered, outstanding performance, top echelon thoroughbred.... simply nothing like it."*

— Harley Michaelis LSF 023



Span = 58 in.  
(2M-lite lift)

Length = 44 in.

Root/Tip Chords 6.5/  
4.5(7/4.5) in.

Airfoil E 374 7.5(9.5)%

Aspect Ratio = 11(14)

Area = 305(441) sq. in.

Weight = 31(36.5) ozs.

Wing Loading = 15(12)  
ozs./sq. ft.

Controls - Pitcheron

Channels - 2

Servos - 2 of 50 oz. - in.  
torque minimum

#### DEDICATED SLOPE SOARER

- Low-drag wing section perfect for aerobatics, high and slow speed slope flight, and racing.
- Proven pitcheron control system confers high roll rate and linear elevator response, resulting in predictable control, agile maneuvering, and great aerobatics.
- Structured to absorb the knocks of slope flying - lite ply fuselage and obechi skinned blue foam cores.
- Breakaway tail units to prevent landing damage to fuselage.
- Alternate 2M wings available for light lift conditions and training.

#### EVERYMAN CONSTRUCTION

- Simple, robust all-wood body structure that anyone can build.
- Tough obechi wing skins and spruce leading edge.
- Simple, light weight balsa modular bolt-on fin and horizontal.
- No fiberglassing required.
- Wings and tail Monokoted. Fuselage Monokoted or painted.

#### PITCHERON CONTROL SYSTEM

- **Pitch-er-on definition:** A total control system based on all-moving wing halves. When moved together leading edge up or down, elevator function results. When moved in opposite directions, aileron function results. Mixing the motions results in a mixed airplane response, as you would expect!
- No horizontal stab control surface is used or needed - the stab is fixed to the fin top!
- Construction time reduced 30% since no long pushrods or complex wing mounted linkages are used.
- 2 channels required - perfect for electronic mixing (Elevon). Sliding-servo mixer shown on plans if electronic mix not available.
- Rotor may be built as a conventional aileron-elevator airplane or a wingeron-elevator airplane. Alternate installations shown on plans.

Flight Demo Video (VHS) Deposit	5.00
Rotor Construction Kit	64.95
Light-Lift Wing Kit	24.95
(2M Span - balsa/foam)	
Shipping	2.50
Wash. State residents add 8.1% SST	

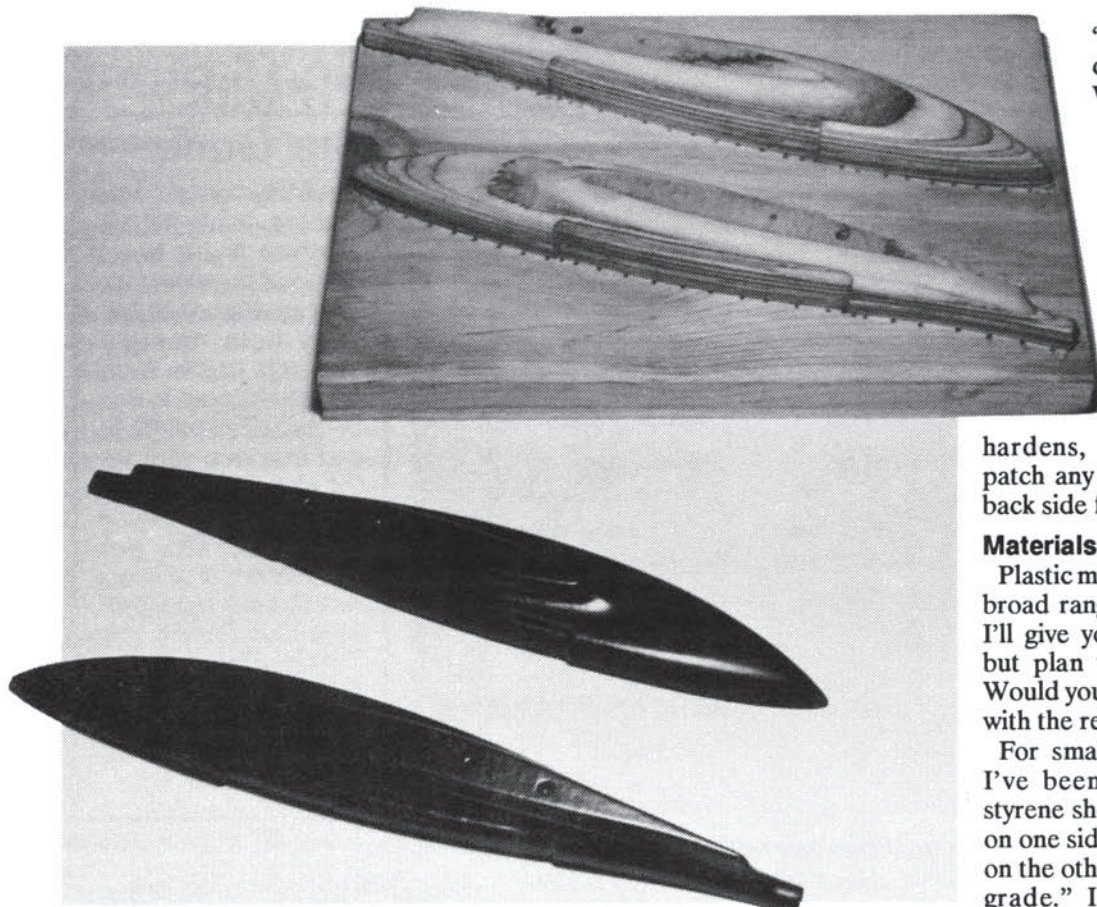
**VS sailplanes**

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Seattle, WA 98103

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**Canopies, pods, even complete fuselages can be formed.**

Here's the tooling and finished halves of a pod-and-boom design. Plastic parts formed with vacuum molding are finely-shaped and almost bulletproof.

## Practical Vacuum Forming

### Part Three

By Harry Finch

In this third and final installment, we'll go into more detail about tooling and walk you through a step-by-step guide to forming your first vacuum-formed plastic part.

In general, the most practical tooling shape will be male. A male tool is of a projecting shape while a female tool is cavity-shaped. It's easier to stretch heated plastic over a male tool than to draw it down inside a female cavity because of the limited amount of vacuum pressure available in our system.

When making a forming tool, consider "draft angles." The male tool should not meet the base at a straight 90° angle, but should be tapered slightly to allow the finished part to slip off more easily.

The amount of detail you can put into a part varies with the thickness of the plastic sheet you use, the temperature (hence, the elasticity of the plastic) and the vacuum pressure available. I've made several different shapes for pod-and-boom fuselages using .060" high-impact styrene sheet and have been rewarded with excellent results with fine detail. When the plastic thickness is increased to .080", the fine detail begins to go away.

The form tool can be made from a wide variety of materials, but I usually employ soft wood, such as pine or basswood. For most fuselages, I like high-quality plywood. You should be able to find some usable scraps of birch plywood, for example, at a local cabinet or furniture shop.

When you make the form tool for symmetrical parts, start out with two pieces of plywood cut to the outline of the part. Then, apply a contact adhesive such as 3M 77 to the surfaces of the wood and sandwich a piece of newspaper in between the two blocks. The paper

"sandwich" marks the exact centerline of the form block. When you have finished sculpting the form, use a large knife to split the halves along the centerline and get the two tools to form your new part.

To make simple tooling for a form such as a canopy, you can use an existing part as a mold. Just fill it with a good grade of casting plaster. After it hardens, remove the original part, patch any imperfections and sand the back side flat.

### Materials selection

Plastic materials are available in a very broad range of types and thicknesses. I'll give you some starting guidelines, but plan to do some experimenting. Would you please share what you learn with the rest of us?

For small- to moderate-sized parts, I've been using .060" high-impact styrene sheet. It usually comes smooth on one side and with a stippled surface on the other. Ask for "vacuum-forming grade." I strongly recommend you begin with high-impact styrene because it's the easiest material I've found to form.

Now, let's walk through the steps involved in forming a small fuselage from .060" high-impact styrene.

### Things you'll need before you start

1. Plastic sheet stock cut to the size of the frame.
2. The frame.
3. A pair of riser blocks which you'll place in the oven to support the frame during heating. They should be about five inches high by approximately the width of your frame.
4. Your vacuum table.
5. The forming buck and buck base, placed on the table over the venturi hole.
6. A pair of insulating gloves.
7. An assortment of small sticks which you may need to push down around the perimeter to help fully form a stubborn part.
8. Some liquid dish-washing soap to be used as a mold-release agent. Spread a light coat onto the entire upper surface of the buck.
9. An assistant, especially for the first few practice runs.



#### 10. The oven.

**EDITOR'S NOTE:** *Slope Soaring News recommends that you buy or build a special oven for your vacuum-forming projects. Do NOT use the kitchen oven that is also used to prepare food. Use a flameless (electric) heat source. Always keep a dry-chemical fire extinguisher on hand. Dangerous fumes may be generated from heated plastic products, so be sure to read the plastic manufacturers warnings and comply with them before proceeding with this project!*—Charlie Morey.

#### Forming the first part

1. Preheat the oven to 300°.
2. Place the styrene sheet in the frame.
3. Place the frame on top of the riser blocks in the oven.
4. Watch everything very carefully. The plastic sheet will begin to sag as it warms up. Don't let it touch any part of the oven or rack, or it'll ruin the material.

5. Using your gloves, take the plastic and frame out of the oven.

6. Place the frame over the forming buck and push down firmly so that it seals around the perimeter.

You'll be able to tell if the plastic sheet is heated enough to form properly. If it doesn't seem elastic enough, just put it back in the oven to reheat. On the other hand, you can easily tell if it's too hot because the surface will "craze" and bubble. That's no good.

Have your assistant turn on the vacuum for you, and you should see the plastic drawn down tightly against the contours of the tooling. Time is critical here. The plastic will cool very quickly. The oven and vacuum table must be located right next to each other so that the transfer of the frame doesn't take more than two or three seconds!

7. If the part doesn't form fully, a variety of factors may be the cause: not enough heat, not enough vacuum, not enough extra material around the perimeter to draw from, etc., etc., etc.

You just have to learn by experiment and analysis of the specific problem(s). I don't have all the answers, and I still learn something new every time I form a new part. (Here's a hint: Sometimes you can use your shrink-film heat gun to apply a little extra heat to a problem spot while the vacuum motor is still running.)

8. Turn off the motor as soon as the part has cooled, approximately 30 seconds.

#### Finishing and trimming the formed part

We now have parts that need to be trimmed back to the proper line. The riser block you put under the buck (refer to Part Two for details) will have left a line at the edge of the part. You can trim the part by hand with a pair of scissors, a razor saw, a band saw or even a table saw. I use a small saw blade mounted on a mandrel that I put in my drill press and set it to a height above the table that is slightly below the part line. It makes trimming a series of identical parts quick and accurate. Plan to save any flat pieces trimmed away from the part to use for joining strips.

I leave about 1/32" of material below the trim line after cutting so that I can final sand it to the line for an exact, smooth fit between the halves.

#### Joining the halves

Now we are faced with the task of joining the two halves. Many good chemical-weld type glues are available for styrene, but I get better results this way: I use Flex-Zap to tack the halves together. Be careful and work slowly to

get the halves aligned correctly all the way around. Then take 1/2" strips of plastic sheet obtained from the trimming operation and use them to reinforce the seam from the inside. Sand the outside seam with 100-grit paper and finish with 200-grit. Finally, take a piece of clean rag and dip a small corner into MEK (Methyl Ethyl Ketone) and wipe it over the sanded surface. Be careful with this step. MEK melts the styrene and causes the plastic to flow, resulting in a shiny, new surface.

#### Canopies

Ask your industrial plastic supplier for some PTEG plastic film, .010" to .030" thickness. It's easy to form, and it's very impact-resistant. You may also want to try some polycarbonate film. It makes a great finished product, but it's harder to form. Also consider acetate/butyrate materials.

#### Precautions

When using solvents like MEK or even when just heating and forming these plastics we've mentioned, it's always best to use a chemical breather mask. When heated, styrene gives off a gas called monomer. It can be quite unpleasant to some people and harmful to others. MEK is dangerous and must be used with extreme care. Do not ever get it in your eyes, and always avoid breathing the fumes.

Plastics are wonderfully versatile materials. They can produce excellent, attractive parts quite easily. But they require caution during forming and joining, especially when heating, as the fumes can be quite toxic.

That isn't to say you should avoid using them. Not at all. Just be careful, and you'll be rewarded with magnificent parts that you never thought possible to make.

## Introducing The LYNX-140

### High Performance, Radio Control Slope Glider

Lynx 140 is a Conventionally Built Almost Ready to Fly slope glider. It's complete with light plywood fuselage, balsa-sheathed foam wings, full flying balsa stabilizer which is removable, installed balsa vertical fin, hinged rudder and ailerons, and well finished with colorful high quality Monokote covering.

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# Radio Tech

## Those New Frequencies – Solution or Problem?

By John Veale, N6RKW

**W**ell, we are finally in 1989 (Happy New Year!), a year after all those new frequencies became available and some old ones became illegal. How is it working out?

Well, as far as I can tell, pretty badly. There still seems to be a lot of the old, illegal radios being used, and the new channels do not seem to perform any better than the old ones.

I don't want to go over a lot of what has been written before about the new frequency plan. For the best overview of the whole situation, Ace R/C has a video tape which tells everything you ever wanted to know. Go see this tape at Wilshire Model Center in Santa Monica. (And while you are there check out one of the best slope-soaring stores in the area.) If Santa Monica, California, is a little out of your way, the tape is available directly from Ace R/C at P.O. Box 511D6, Higginsville, MO 64037; 816/584-7121.

The big problem is that the new channels (12 through 32 and 58) are in the same part of the radio band as the old nonchannel frequencies,

Brown/White up through Green/White.

In the old days, radios were not narrow band, and the frequency accuracy was +/- 10kHz (.01mHz). These old radios may also be off another 10kHz with age (could be 15 years!), so they may affect other radios up to 50kHz (0.05mHz) away.

So, my summary of the Old vs. New Frequency situation is that Brown/White will hit Channel 14, with possible hits on 16 and maybe 12. And so on up the band, as marked in bold type on the chart. If you get a new radio in this band you will be safer on 12, 16, 20, 24, 28 and 32. But still watch out for those old radios!

I guess we don't worry about

Green/White at 75.64mHz.

So why is anybody still using the old frequencies? Well, the dumb answer is that no one is stopping them. Certainly the FBI, CIA, AMA, FCC, the local cops and your mother are not. That leaves you and me. We must tactfully inform them—preferably nonviolently—that their radios are illegal, their AMA insurance (if they have it) is void, and

definitely not with just a crystal swap.

*Do not give old radios away!* They may turn up to haunt you! Just put them in the trash compactor and buy a nice, brand-new radio with fresh nicads and new servos. You will be much happier. You can save the old servos to use in non-flight-critical applications, such as flaps, rudder (assuming you have ailerons) or spoilers.

In fact, the discount prices on new radio systems (Futaba 4NL for \$99) make it worth buying just to get another airborne system!

Is there anything we can do about other interference problems? Well, the airwaves are not perfect. Listen to the AM radio in your car; you will hear snap, crackle and pop. Our radios have to deal with the same thing. You may have driven past an AM radio station on a different frequency to the one you are listening to and heard the other station breaking in. The same thing happens if you fly your plane near someone else's transmitter. (We slope-soaring types do tend to fly close!) It is very important that all pilots stand close to each other to

avoid this problem and don't fly too close to other transmitters. Also remember that your transmitter works best with the antenna vertical!

What about PCM radios? Do they help with interference? Well, yes and no. PCM (Pulse Code Modulation) uses a computer chip in the transmitter to digitally encode the signal and another in the receiver to decode it. This digital signal can be stored in the receiver to give a "fail safe" feature. If the received signal is bad (or not present) the receiver will hold either the last good signal or a preset fail-safe setting. This allows you to fly through a momentary glitch without something drastic happening. However, since

### Old Frequencies vs. New Frequencies

OLD Colors	Frequency	NEW Channel	Frequency
		12	72.03
<b>Brown/White</b>	<b>72.08</b>	<b>14</b>	<b>72.07</b>
		16	72.11
<b>Blue/White</b>	<b>72.16</b>	<b>18</b>	<b>72.15</b>
		20	72.19
<b>Red/White</b>	<b>72.24</b>	<b>22</b>	<b>72.23</b>
		24	72.27
<b>Violet/White</b>	<b>72.32</b>	<b>26</b>	<b>72.31</b>
		28	72.35
<b>Orange/White</b>	<b>72.40</b>	<b>30</b>	<b>72.39</b>
		32	72.43
<b>Yellow/White</b>	<b>72.96</b>	<b>58</b>	<b>72.95</b>
Green/White	75.64		

(All above frequencies in mHz.)

**"The big problem is that the new channels (12 through 32, and 58) are in the same part of the radio band as the old non-channel frequencies, Brown/White up through Green/White."**

the nicads in their radios are probably corroded by now. Tell them to send all old radios to David Letterman to run the steamroller over.

If you have one of these old radios, I do not think it is worth the hassle to try to have it changed to a new frequency,



more complex information is sent in PCM coding, glitches occur more often. (And the way we fly sometimes, holding the last position is not always what we want!)

Another disadvantage to PCM (which maybe only I notice) is the additional delay between moving the stick and the servo responding. This is due to the extra time for the signals to go through the computer chips.

One other small point: If you are only using two or three channels, a two-, three- or four-channel radio will be more reliable than a seven- or eight-channel model because the servo information is sent more often.

What about the antenna in the airplane? Usually the receiver antenna is about 30" long...longer than some of our planes! Yes, I see a lot of planes with a piece of wire hanging out the back end, but there are better ways. You can

**"What about the antenna? I see a lot of planes with a piece of wire hanging out the back end, but there are better ways."**

run the antenna up the leading edge of the vertical tail and along the top (I use trim Monocote to hold it in place). This also helps with range. The best solution is to use a special short antenna with a loading coil, which your hobby store may have for car applications, or they can be obtained from Kraft Midwest (313/348-0085). These are only 18" long and seem to work the same as a regular antenna.

I got a good response to the CCCV charger in last month's column. I will do more items like that in the future. One question I got was, Can the charger be used for other than 100ma packs? The answer is yes. The charge current will still be about 150ma, so charging time will be about the same as flying time. The charging current can be increased, say, to 300ma by changing R1 (was 30 ohm) to 15 ohm, but use this current only on 250mah and bigger packs.

Questions about this month's column or about any radio-related subjects? Please send them to Radio Tech, c/o John Veale, 1116 A Eighth St., Manhattan Beach, CA 90266; 213/370-6237.

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**OUR BACK ISSUES ARE HISTORY.**

No, they aren't a significant archive or particularly important in any way. It simply means that they're all gone. Outa here. History. We printed only as many as we thought we could sell. And, as it turns out, we guessed right. Sorry!

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**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...



## Two standard Falcons and the new XF!

Dale Widmer holds Falcon #3, Mike Reed shows off the not-yet-available Falcon XF and Scott Shilling displays his Falcon built from Reed and Maas' first kit.

## LA SIERRA SLOPE SOARERS

Dale Widmer, V.P. of La Sierra Slope Soarers, offered to let us join the club for an afternoon of aerobatic competition and fun flying. We had a great

time and got to see some very interesting aircraft.

### Stunt contest with a twist

The AMA rule book actually has a format for slope aerobatics competition, but Contest Director Chris Gunther tossed those "serious" regulations aside

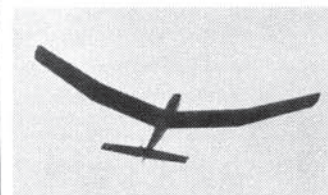
in favor of a pure-fun approach.

Two categories were offered: one for rudder/elevator planes and one for the aileron ships. Six specific stunts were defined: stall turn, loop, roll, inverted roll, outside loop and one more which escapes my memory. Point values were assigned to each one. For example, the stall turn was five points; a loop, 10; a roll, 15; and so on, with the harder tricks worth more.

Each contestant was given one minute to gain altitude and one minute to execute as many of the maneuvers as possible. There were two mandatory maneuvers that had to be completed before going into a long string of loops (a good tactic for the floater class, for example) to rack up points. Each contestant selected his two mandatories from this selec-

tion: stall turn, loop, roll. The flier had to call each maneuver before he flew it, and the object was to produce quantity, not necessarily quality aerobatic moves.

Then, just when you thought you'd totalled up a nice score, they'd lead you back to the truck and make you roll a die. Depending on the number that turned up, you could lose half your score, or perhaps double it!



## What's wrong with this picture?

According to Ed Laird, nothing. He likes his deviated Drifter!

A "one" cut your score by 50%, "two" by 25%, "three" let you keep what you had, "four" added 25%, "five" added 50% and "six" doubled your score. This last twist keeps the same club hotshot from winning every time (and at the same time takes the pressure off him to do so) and creates a relaxed fun-fly atmosphere where anyone can win.

## "Backwards" floater

Ed Laird's Craft-Aire Drifter might not have even caught my eye...except for its forward-swept wing! Ed used the original kit parts but, just as an experiment, swept the wings forward 10°. He feels the modification offers better tipstall control and a better lift/drag ratio. It's definitely an eye-catcher!

## Mike Reed's Slop-ar flies in light air, yet is fast, too!

Slop-ar sports a 52" span, 32" length, 330 sq. in. wing area, Selig 3021 airfoil, 14-21 oz.





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

### Falcon and Slopap

Does the name Mike Reed ring a bell? Mike and partner-in-crime Carl Maas have conjured up a number of interesting aircraft, among them the Falcon flying wing. There were a number of Falcons flying the day we visited La Sierra Slope Soarers, and Mike also had his new slope racer, the Slopap.

Here's Mike's description of the Slopap: "The Slopap was designed to fill the need for a light-air slope glider. Carefully built, it will weigh about 14 ounces. This weight is ideal for low-lift slopes such as beaches and calm inland hills that have a wind velocity of 9 to 12 mph. This glider can be ballasted to 28 ounces for flying in normal wind conditions.

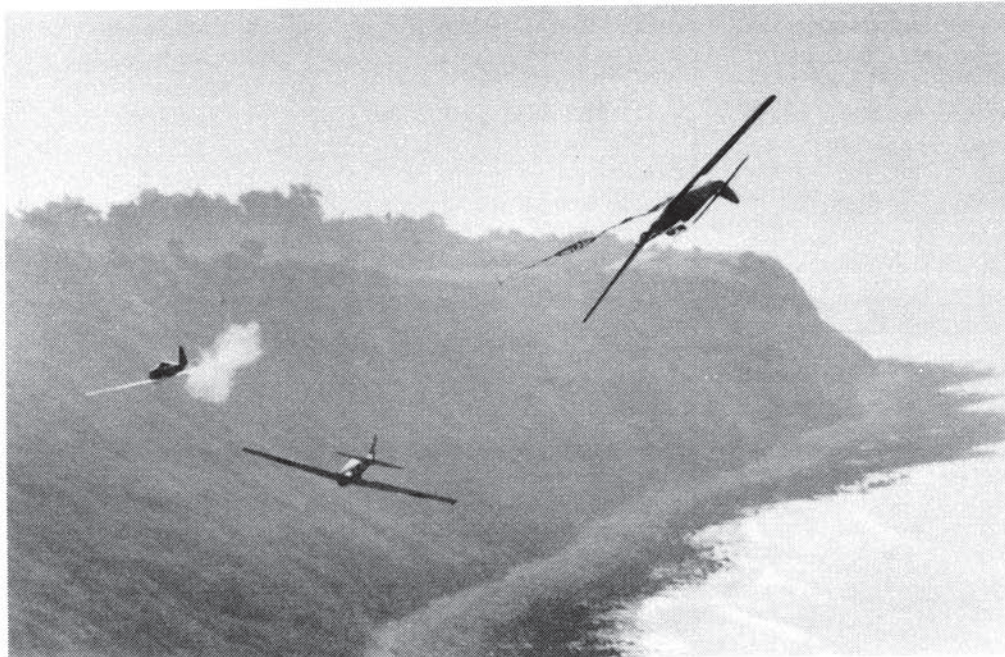
"The basic shape of the Slopap was inspired by the Aeromacchi 339 PAR jet. This is not a scale sailplane but a clean efficient design that will fly in very light lift with some good looks thrown in.

"The Slopap was designed to use small radio gear such as the Futaba micro four-channel receiver with S-33 servos. However, the fuselage can be built to suit the standard servos. The versatility and low-drag qualities of the Selig 3021 airfoil give this plane spar-

#### Membership Info

Does belonging to an active club with its own flying site sound good to you? The La-Sierra Slope Soarer's hill is in Corona, California, and V.P. Dale Widmer can fill you in on the logistics of joining.

Write or phone Dale at 1507 E. Banyan, Ontario, CA 91761; 714/395-9207.



### Sudden impact! Gary Kawamura snatches the streamer...

...the explosive link fires, and victory is his! Or is it? (Below left) Why are Paul Masura and Brian Laird laughing as Gary crumples on the ground? (Below right) Here's why! Immediately after grabbing the streamer, Gary's plane augered into the bluff. Thanks to friends with a long rope and strong arms—and a fighter pilot's fearlessness—Gary was able to perform a search and rescue operation on Bluff Cove's near-vertical face.



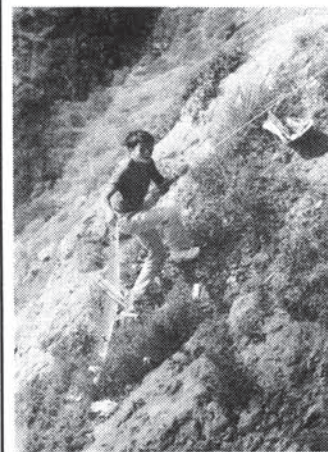
ders only for mail-order sales. He also does vacuum forming and custom foam-core cutting. Contact him at Aerofab, 1775 #B Dimitru Way, Corona, CA 91719; 714/737-5493.

### POWER SCALE COMBAT

Leave it to the Bluff Cove gang. The designers, builders and fliers of those beautiful scale WWII warbirds naturally love the concept of combat. But would they risk their lifelike replicas in the rigors of slope soaring aerial warfare?

You'd better believe it!

The Bluff Cove guys practice yet another variation on the rules. Instead of putting streamers on all the participants (which creates



a greater risk of midair collisions), they select a volunteer "target." A time period is chosen, and if the target survives, he wins. If anyone else steals his streamer, that pilot wins.

Oh, yeah, and the streamer's different, too.

Instead of simply attaching some tape to the target's tail, the Bluff Cove



# Scraps...

guys use an explosive link. It's like those little party poppers, you know, where you yank the string and streamers pop out? Except these are homemade and the charge is bigger! A leader line runs from the plane to the explosive link, then the banner's attached behind that. Powder burns are common on planes that win a lot.

There. The stage is set. We'll let the photos and captions tell the story of a rough day at Bluff Cove.

## HEY, ARMAND!

It's always the same: Armand De Weese saunters up with a tiny plane or two



under his arm, looking forward to a couple hours of flying. But first, he has to deal with his admirers.

"What have you got for us this time, Armand?" De Weese never lets us down. This time, it was the little wingeron ship you see in the foreground. Vacuum-bagged wings, that flat, 28° from horizontal V-tail, exquisite workmanship and brilliant performance have become the norm. The new "winger" was no exception. Now, if only we could convince him to kit them!

## LEAVING BALSA BEHIND

Ron and Karen Wagner of Hi Performance Sailplanes offer some very unique building materials, and they also provide instruction on how to use them.

Their most unusual product, HP Cell, is used to replace balsa or 1/64" ply as a foam-wing sheeting material. HP Cell is 1/16" thick and is available from the Wagners in 24" x 96" sheets for \$16.

Other products include Magnamite carbon fiber laminates, complete vacuum-bagging kits and products, fiberglass cloth, mylar, foam, epoxies and honeycomb.

If you have some custom work you'd like to have done, the Wagners can help there, too. They'll prepare a complete wing kit with foam cores, HP Cell skins and spar with wing rod

### Slippery!

De Weese's new V-tailed vacuum-bagged, Jack Chambers-airfoiled wingeron is a masterpiece in balsa, foam and glass.

ready for you to complete. Or they'll even build and vacuum bag a complete wing for you. Call with your specifications to get a price.

Send a self-addressed, stamped envelope for information and prices on these products to Hi Performance Sailplanes, 17902 NE 156th St., Woodinville, WA 98072, or call 206/487-1721 for more information.

Please be sure to mention *Slope Soaring News!*

## TALON TIPS

We're trying something new this month. There are a lot of talented builders among our readership, and we'd like to see if you're willing to share the knowledge.

If you have built and flown a Bob Martin Talon, and if you have made modifications that improved it, please write in and tell us about it. (Attention: Bob Martin! We'd especially like to hear your comments.)

As soon as we've collected a good number of reader tips, we'll print them (giving credit to each of you, of course).

If this concept works, we'll try it again with another popular kit. Sound interesting? Write!

And be sure to mention which kit you'd like us to try next, after the Talon.

## WILSHIRE CLOSES SHOP!

Bob Ratzlaff, owner of Wilshire Model Center, has announced that he will close the store on March 1, 1989. Everything is on sale at reduced prices, so help Bob

unload his inventory by buying all you can afford and getting a good deal at the same time.

Wilshire's closing marks the end of an era. Original owners Hans and Maddie Weiss proved that a sailplanes-only business could thrive. Now, apparently, it can't even survive, and that's sad.

## 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

**Hobby Warehouse**  
4118 East South Street  
Lakewood, CA 90712  
213/531-1413

**PEC's Hobby Supply**  
947 N. Shoreline Blvd.  
Mountain View, CA 94043  
415/968-0800

**San Antonio Hobby Shop**  
2550 W. El Camino Real  
Mountain View, CA 94040  
213/531-1413

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



## Wingin' It

(Continued from p. 2)

price.

I now have a beautiful but slightly battered F-86 in the shop. Part one of its revival plan includes some strengthening of the fuselage. The kit was designed to be greased-in on scale landing gear by talented ducted-fan pilots, not stuffed in the grass, slope-style. As a result, the fuselage has some fractures that need patching. It needs some formers installed, and then I think I'll run a rolled tube of light ply straight through the middle. The tube should stiffen the fuse significantly and also clean up the airflow through the fuselage. It'll match the nose and tail openings, providing a direct connection with no obstructions. And who knows, it might even create a nice howl. I can't wait to hear it on a high-speed pass!

After I'm sure it flies well and is strong enough to withstand the rigors of slope soaring—especially the landings—I'll add scale detail. Bob Banka of Scale Model Research has offered to help with the documentation, so it should look authentic. I hope to have this project completed in time for the Tri-City Soarers Scale Fun Fly at the end of May. You'll see more of this plane and the Flair in upcoming issues.

Jet Hangar offers the F-86 and another favorite of mine, the F-9F Cougar. The Cougar actually has more wing area and a pointier nose than the F-86, so it may make an even better choice for slope conversion. Or if you're really ambitious, try their F-4 Phantom or F-15. All the Jet Hangar fiberglass is done by Mark Hambelton at DCU, and it's high-quality stuff.

For more information on Jet Hangar

kits, contact Larry Wolfe at Jet Hangar Hobbies, 12130-G Carson, Hawaiian Gardens, CA 90716; 213/429-1244.

## Vintage Sailplane Association

The newsletter I mentioned is for the Vintage Sailplane Association. VSA is comprised of both full-scale and model-scale glider enthusiasts who restore (or pattern their models after) vintage sailplanes. If you've ever admired a Minimoa, Grunau Baby or Rehier, you may want to join the VSA.

Membership is only \$10 a year (\$15 for family, \$25 for business) at the Vintage Sailplane Association, Scott Airpark, Rt. 1, Box 239, Lovettsville, VA 22080, and your membership includes the quarterly newsletter *Bungee Cord*.

If you talk with any of these people, please mention *Slope Soaring News*. Thanks!

Charlie Morey

## Air Mail

### COYOTE HILLS

We, up north in the San Francisco/San Jose area, do a lot of slope soaring. I fly mostly at Coyote Hills Regional Park, a great site located right on the bay with a flying radius of about 300°. So, the wind direction is normally not a problem.

In the mornings, we can fly thermals. When the wind comes up, we continue with slope lift. We can fly the big scale models as well as the one-meter or power-scale variety.

I typically fly a Multiplex scale model of the DG600, a four-meter monster, and the J.M. Glascraft Penetrator P51D when the wind is really blowing. This site is great for the big planes as there is plenty of lift and room. On a good day, you can get well out over the bay with lift so strong you can hardly see your four- or five-meter plane.

You should look into this site. Slope soaring is not only for the little guys on the small cliffs.

Good luck with your publication, and don't forget the top half of the state.

**Thomas Getchell**  
Menlo Park, CA

*Coyote Hills sounds excellent, Tom. We'll be driving up to the Tri-City Soarers Scale Fun Fly at the end of May. Perhaps we can stop and play in San Francisco for awhile. In the meantime, if there's*

*anyone in your area who can write a Site of the Month story on Coyote Hills and take a couple of pictures, we'll be happy to print it. Fair enough? Thanks for the letter!—Charlie.*

### ARKANSAS ADDICT

I'm a slope addict, and I'm new to Fort Smith, so I'm still looking for places to fly. A friend and I fly at a quarry nearby. It's a very good place to fly but a very bad place to crash. It's difficult and dangerous to rescue downed planes.

There's also a lake not far away with a very large dam at its southern edge. It catches wind from either north or south. The only time I've flown there, the wind was from the south and very turbulent.

I think turbulence will take on an entirely new meaning to my flying now. In fact, three weeks ago, when nine tornadoes killed six people in Arkansas, I was up on the slope flying. Where else would anyone in his right mind be in wind like that?

I started flying slope when I lived in Albuquerque, New Mexico. The flying there is fantastic! Miles and miles of flat mesa and then nice two- or three-hundred-foot escarpments. The air was so laminar that it felt like it must have come straight from the Pacific Ocean. And it was loaded with thermals!

I know you can't report the slope news for the whole country since you live and fly in southern California, but I like seeing new planes and hearing about

slope flying from anywhere. I think you have a great idea, publishing *Slope Soaring News*, and I really hope it works.

**Nick Trubov**  
Ft. Smith, AR

*You sound homesick for those New Mexico mesas, Nick. I know how you feel about hearing the news from other areas, too. In fact, I'd like to see a photo or two of your quarry and dam flying sites. They're unusual, and they show the determination of a real sloper to find flying, no matter where he has to look! Thanks for the letter. Hope to hear from you again. Any other readers out there with unusual slope sites?—Charlie.*

## Want Ads

### THE FRENCH FLYER

Sensational easy-to-fly 48" wingeron. Complete with two standard servos. Only 18 oz. ready to fly. \$95. (2-4 channel receiver required.) Greg French 213/597-6346. (12/88-2/89)

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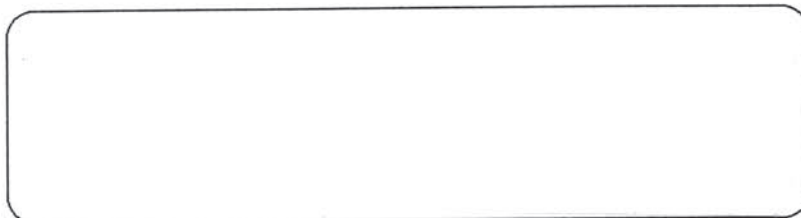


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Address \_\_\_\_\_ No. of planes owned \_\_\_ No. of radios? \_\_\_

City \_\_\_\_\_ State \_\_\_ Zip code \_\_\_\_\_

I'm interested in \_\_\_ Building techniques \_\_\_ Flying techniques \_\_\_ Planes and the people who design them

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Other? \_\_\_\_\_

Favorite Hobby Shop(s) \_\_\_\_\_

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