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APRIL 1977

volume 7, number 64

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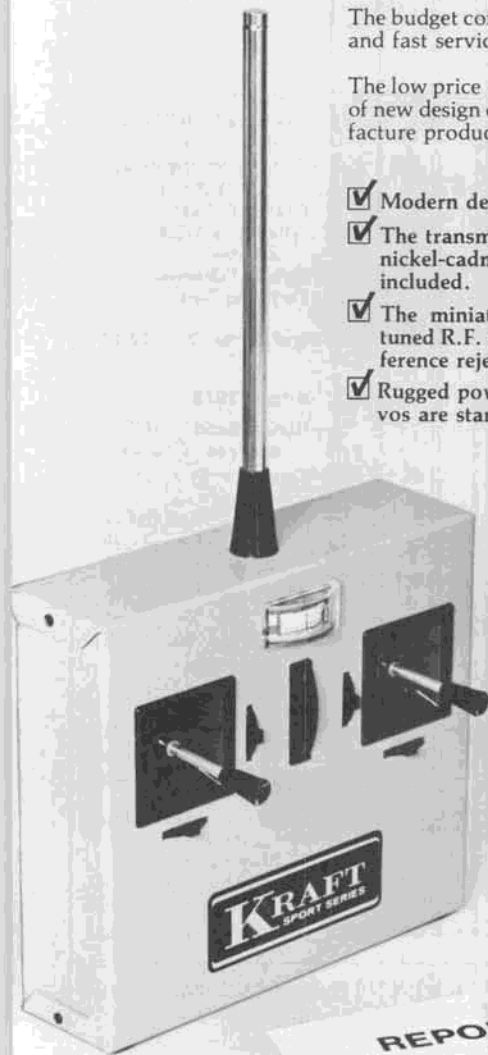
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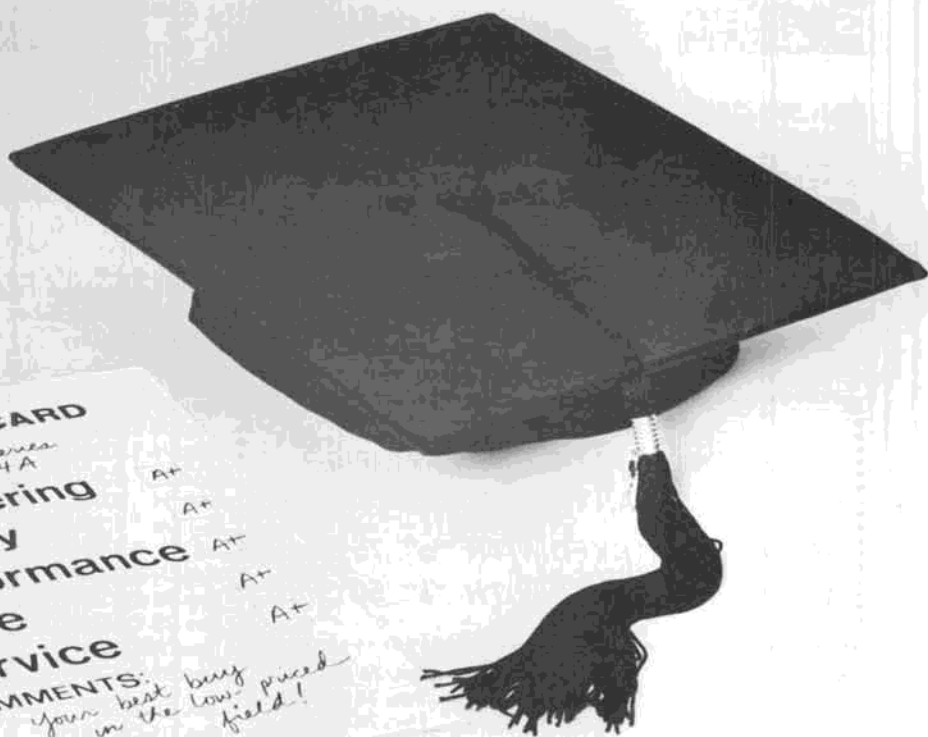
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# MODEL BUILDER

APRIL

1977

volume 7, number 64

621 West Nineteenth St., Costa Mesa, California 92627

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## CONTENTS

### FEATURES

"THREE IF BY AIR", Letters to the Editor . . . . .	6
WORKBENCH, Bill Northrop . . . . .	8
OVER THE COUNTER, Eloy Marez . . . . .	9
REMOTELY SPEAKING, Bill Northrop . . . . .	16
PLUG SPARKS, John Pond . . . . .	20
CHOPPER CHATTER, John Tucker . . . . .	26
R/C SOARING, Dr. Larry Fogel . . . . .	29
PRODUCTS IN USE, Charlie Viosca . . . . .	32
R/C POWER BOATS, Bob Preusse . . . . .	34
R/C PYLON, Jim Gager . . . . .	36
CONTROL LINE, Dan Rutherford . . . . .	40
STRICTLY SAIL, Rod Carr . . . . .	42
A SHORT HISTORY OF MEGOW MODELS, Tanzi and Grigg . . . . .	45
THE MODEL SHIPYARD, Bill Northrop . . . . .	48
F/F SCALE, Fernando Ramos . . . . .	49
HANNAN'S HANGAR, Bill Hannan . . . . .	50
THE HALF-A SCENE, Larry Renger . . . . .	54
FREE FLIGHT, Bob Stalick . . . . .	56
MODEL ROCKETRY, Douglas Pratt . . . . .	62

### CONSTRUCTION

"MISS ARPIEM", Dr. Dee Mathews . . . . .	12
CLOUD CHASER O.T., Bruno Marchi . . . . .	25
BOX BOY, Dave Jessee . . . . .	39
AERONCA L-3 "DEFENDER" PEANUT, Walt Mooney . . . . .	51
VOLARE A/2, Ron Roberti . . . . .	60

Cover: Just a reminder of those balmy summer flying days ahead . . . Hal Cover, with his Lanzo Puss Moth, at Lake Elsinore, California. This semi-scale rubber model is equal in performance to many Wakefields and Unlimiteds, at least the way Hal flies it. The plans (No. 1772, \$3.00) have been one of our best sellers. The 22 inch long Edo float plans are also available (No. 10732, \$1.50). Ektachrome transparency by Bill Northrop.

# "...THREE if by AIR"

(Letters to the Editor)

Dear Mr. Northrop:

In your February column of, "Three if by Air", appears a letter from K.G. on local hobby dealers and your advertising policy. I wish to add my support to K.G.'s opinion, plus my own views.

The closest hobby shop to us is 40 miles away. Within a 50 mile radius, three hobby shops with limited stocks are available. One shop is run by hucksters, one by courteous personnel but with undependable stocks, and the third by a very competent modeler. Whenever possible I buy from the third shop, but by necessity, his stocks are primarily limited to the tastes of the majority of his trade. My tastes apparently are for the more complex models and scale. Therefore, because of unsatisfactory dealers, and a need for the less usual, I buy a great many of my kits and supplies by mail.

Having been present when some of the local hobby distributors were in the stores, it is obvious that they know little about model aircraft or the people involved. They are not capable of furnishing support to the dealers.

Policies of restricted advertising and the pricing policies of many of the manufacturers who sell direct, add to the frustration of the serious modeler. One of the prime reasons for subscribing to hobby publications is to find sources of materials at the best prices. When a publisher does not print the ads of reputable businesses, he fails to recognize the interest of his subscribers and becomes a trade publication. Secondly, I must admit that a restricted advertising policy smacks of an intellectual bureaucracy in that it expresses an attitude of, "The dumb so-and-so's aren't competent of making a reasonable and responsible choice, so we will only offer them what they need (in our opinion) at the price they should pay (in our opinion)."

It has long been an irritation to me that I must pay excess shipping and handling charges to purchase directly from manufacturers, items that they cannot get local dealers to handle. This situation becomes more grinding when one is able to purchase the same item at a discount price and at more reasonable shipping charges from one of the mail order houses. Since there is obviously a mark-up from the manufacturer to the distributor, a mark-up by the dealer, excess shipping charges are not protective of dealers who do not handle

the product, but are an insult to the consumer.

For these reasons, and as a customer of your magazine, I request that all reputable hobby firms advertising be carried in your publication as a service to the consumers in the hobby.

Yours sincerely,  
James W. Roberts,  
Childersburg, Alabama

Dear Bill:

I'm writing in response to K.G.'s letter in the February issue. K.G. stated that most hobby shop proprietors seemed to care only about his wallet and that their staffs were unable to offer advice on the more technical aspects of radio control.

Having managed a hobby shop for more than two years (and having been a clerk in one for the previous eight) it surprises me to read that many shop owners are unwilling to advise a customer; some time ago, I realized that the two key features of a small business are friendly service and sound advice.

A few customers, however, make it very difficult to be friendly. More than one R/Cer has opened the latest R/C magazine to show me the monthly mail order "super specials". Other flyers are antagonistic in a different manner. My classic example is the novice who couldn't be bothered with a trainer. After a twenty minute explanation of why a three-foot, four-channel Corsair would be an unwise first attempt, I asked him if he understood. "Yes", he said, "but if I'm going to spend \$300, I'll get what I want." After dealing with one of the above types, I may not be in the best of humor for the customer who deserves it.

K.G.'s second claim; that clerks are generally not competent R/Cers, is a problem not easily resolved. There are simply too few good R/Cers who are willing to be clerks. Conversely, not all good clerks are competent R/Cers.

To sum things up; a moderate amount of tact and thoughtfulness expressed by customers, and, according to K.G., dealers, is appreciated.

Sincerely,  
Mike Garber, Mgr.  
Crosby's Hobby Centre  
Lynn, Mass.

J&P Hobby Enterprises is the parent organization of five Crosby's Hobby Centres.

I guess most of us who have tried to advise a beginner in R/C have had similar experiences . . . "I plan to build a B-17 with working bomb racks, gun turrets, windshield wipers . . .", but the ones who follow your advice and appreciate the help more than make up for the occasional "hopeless case".

Dear Bill:

Having read K.G.'s letter in the Feb. '77 issue about his local hobby shops and their attitude, I must admit that I have run into similar situations. However, this is not the case at my hobby shop.

The owner will sell a beginner a plane he wants but, only after practically begging him to buy a simple trainer model. He also suggests the beginner talk to a proficient flier and builder for help in building and flying his model. Also he gives helpful advice and suggestions to all modelers, and will order anything you want.

I do have a rather long distance to travel to this hobby shop (about 70-75 miles), but for the above reasons, I buy at this hobby shop rather than buy from a mail order house. I also like the personal contact.

I live in Unionville, MO, and the hobby shop is on Ottumwa, Iowa. Sorry to keep ramblin' around and wasting your time, but I wanted to show not all hobby dealers are interested just in a buck.

Sincerely yours,  
Thomas E. Linhardt  
Unionville, MO

Amen!

Dear Sir:

The subject of your February 1977 letters to the Editor column has been cussed and discussed for some time. I seriously doubt that it will be put to rest anytime soon.

I buy a high percentage of my modeling supplies from mail order outlets. There are several reasons for this and I will discuss some of them briefly.

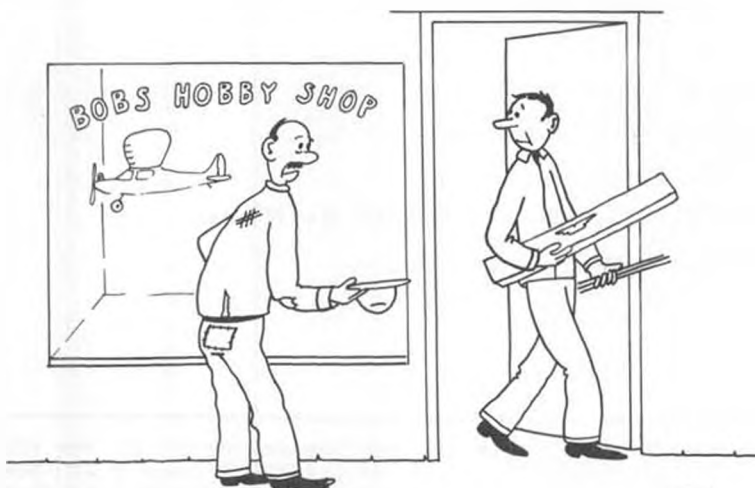
Availability is one of the most important reasons. The hobby shops in and around my area do not carry a large inventory. By going the mail order route, I can find any given product on any given day in stock with one of the many mail order stores. I personally have as good a selection of kits on my shelf at home as my local dealer.

Convenience is also important. The closest hobby shop with a good selection is in another community 90 miles from here. Why should I drive 180 miles round trip in this day and age of one energy crisis after another, when I can pick up the phone and call in an order that will be mailed by the next day? Also, if that particular mail order store does not have my supplies in stock, they will tell me, and I can place another call to someone else, having wasted only a phone call and not 180 miles of driving time and expense.

Speaking of expense, the cost of our hobby is no small matter, but cost is probably the least of reasons I go to the mail order stores. Certainly, in some cases there is a great savings and I appreciate that, but other times, by the time you pay postage, phone calls, etc., you are paying almost retail cost.

On the other hand, what, pray tell me, is wrong with buying at the best possible price? When you shop for groceries, a new car, or a suit of clothes, don't you make some attempt to get the best possible price and the most for your dollar?

I would certainly hope that manufacturers practice the philosophy of getting the best practical buy when they manufacture kits, engines, etc., So why should the general modeling public not also be allowed to buy at the best possible price, without being condemned by some of the manufacturers and



KAM

"CAN YOU SPARE TWO DOLLARS FOR A TUBE OF GLUE AND SOME 1/8 SQUARE?"



magazines?

My last point touches on service and the help that many hobby shops hire. I have ordered things through my local hobby shop, and it seems as if they are really being put out by my request. To that attitude, I say fine. I will go elsewhere.

The majority of people who I have run across working in hobby shops know very little, if anything, about my hobby. I have always felt that a knowledgeable dealer was one of the biggest benefits available, and when that is not available, it sure makes a mail order store look good. The mail order personnel I have talked with are, for the most part, knowledgeable and friendly.

To sum up this letter, I will go on purchasing from mail order outlets as long as my local dealer continues to give me the feeling that I am a nuisance when I want to special order something he does not have on his shelf, and as long as he staffs his shop with people who cannot talk the language of my hobby.

I anticipate my spending on modeling supplies will be in excess of \$2,000 this year. If my hobby dealer does not think that worth my patronage, I promise I will go elsewhere.

G.F. Shaw, Bellingham, WA

A rather famous individual once pronounced, in summing up a rather heavy debate that seemed to be going nowhere . . . "Much can be said about both sides of the question." Perhaps we had better conclude this debate on the same note . . . Beeeeeeeep!

Bill:

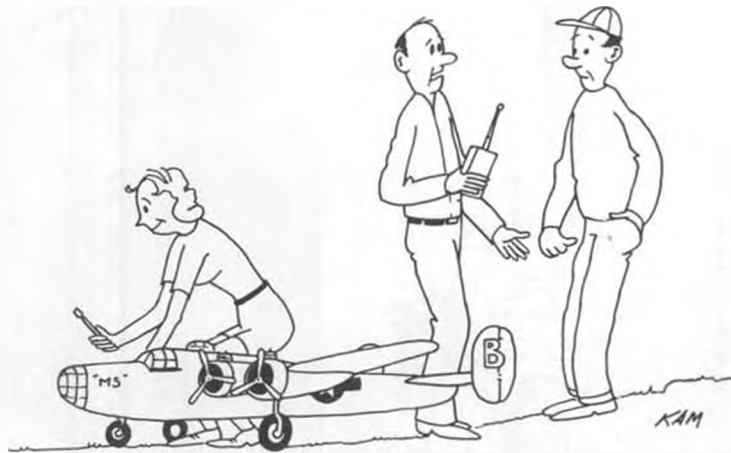
Though not very active in modeling lately (been restoring three old cars), I just had to comment on your proposal for Mammoth Classic Scale.

In short, I think the idea is just great! It combines the four aspects of modeling that so many of us love, namely, Classic Scale, Old Time Construction, control by Radio, and BIG airplanes. Particularly like the proposal that the model need not represent a particular aircraft, so that the modeler can indulge his creativity as regards color schemes, etc.

May I suggest that the quickest way to get all us slow starters to our building



We meant to publish this photo last month, to go with the letter from Ed Rowe, of Endicott, N.Y. It's an XP-3 on C/L, Forster 99 engine. Taken at Hobbs Air Base, N.M., in 1943.



"DO YOU SUPPOSE IT'S JUST A COINCIDENCE HER FIRST PLANE IS THE 'LIBERATOR'?"

boards (doors?) would be to run one or two good plans in MB?

Best of luck, I really hope this one catches on.

Robt. P. Stewart, Hornby, Ontario  
Canada

Although Mammoth Classic Scale plans will create a massive paper shortage crisis, we're working on it. Hope to have some soon. Between Peanuts and Mammoths, I guess you'd call us extremists.

Dear Mr. Northrop,

I really like Beechcraft Staggerwings, and have one 24 inch span plan, but I would like to know if it is possible to get a peanut plan of a Beechcraft Staggerwing, and if so, where. Thank you very much.

Chris Callahan, San Jose, CA

Whattaya say, Walt? Can we satisfy this gentleman?

Dear Bill:

In reading through your interesting magazine, I came across February's Mystery Model. Being an old timer indoor builder from back in the mid '30s I think I know that model or at least its derivation.

It's a product of the Philadelphia Model Airplane Society . . . Victor Fritz's group. I think it was Erwin Leshner's design, though it was also flown by Hyman Oslick.

It was great seeing guys whom I hadn't seen in 40 years in some cases, and I had to admire the great workmanship and sophistication of the models. 'Have to admit that the relative lack of technology in the earlier years required more ingenuity and innovation . . . or am I showing my age?

Good luck to you with your magazine, Bill.

Herbert J. Greenberg, Millburn NJ

You're showing your age, Herb, but you're right! As for your answer on the February Mystery Model, you'll have to wait until the May issue to find out.

(For those Old Timer modelers who may not be aware, Herb designed the famous Scientific "Red Zephyr". He was also a pioneer in microfilm covered indoor modeling. In the third paragraph, he is referring to his visit to the 1977 WRAM Trade Show, where we met for the first time.)

Dear Bill:

In reading your "Remotely Speaking" I am disturbed by the no dummy engine rule for Stand Off as put forth by the Toledo Show. I believe in the 10 ft. only details, as this was "the" reason for Stand Off. On cowed engines I whole heartedly agree. But on old-time craft, such as my Fokker, or the

"Spirit of St. Louis", well, it would just take too much from them.

I believe most "Stand Off" scale modelers do not believe in opening doors, flight panel instruments, rivets, blue eyes on Clarence Chamberlain seated in the Bellanca "Columbia", etc. Certainly the Spirit would not do well judged against Willy Post's "Winne Mae" without some sort of dummy engine. I hesitate to mention this, but this was part of my reason not to use "over the counter" cylinders on my Fokker Trimotor.

George Clapp, Central Square, NY

We believe you're right, George. If the Sport Scale models are properly judged, the engine cylinder problem would take care of itself. "If you can't see it, you can't judge it." This is why scoring workmanship in Sport Scale is so ridiculous. You've seen that famous rear bumper sticker, "If you can read this, you're TOO DAMN CLOSE!" Sport Scale, to maintain its basic premise should be static judged from no less than 50 feet away, and workmanship should not be a criteria.

This cartoon is repulsive (reference is to page 104, Feb. '77 issue. wcn) I was going to renew, but this contemptible, sexist cartoon certainly changed my mind. It is no wonder we have so few girls and women in modeling, with attitudes such as are expressed in this, and now that I look at your other cartoons I see the contempt you hold for women.

May I suggest you: discontinue all such cartoons, publish an open apology, and start showing women in your cartoons as intelligent, capable modelers on an equal footing with men.

James C. Nichol, East Walpole, Mass.

Since I never plan to discontinue tipping my hat to the ladies, opening doors for them, holding their chairs, and getting up to give them a seat on the bus, I feel I'm entitled to an occasional "contemptible, sexist cartoon."



**NATIONAL SOARING SOCIETY**

For additional information, a free copy of the NSS Journal, Sailplane and an application blank, forward your request to: Stan Pfost, Sec., NSS, 2110 Venetian Way, Winter Park, Fla. 32789.



## from Bill Northrop's workbench

• • •

### YAWN

In still another move to legalize the illegal actions of irresponsible CB radio "slopperators", the FCC has backed down on another of its former requirements.

Effective February 24, 1977, transmitter identification cards (FCC Form 452-C) are no longer required to be posted on radio equipment operated in the Citizens Radio Service. According to Jeremiah Courtney, AMA's legal representative to the FCC, the Commission has decided that posting of the transmitter ID card has been of little enforcement value, and any marginal value the requirement might have for them was outweighed by the burden of the procedure to the public. These transmitter ID tags were required to be posted on CB transmitter in order to identify the licensee of the radio equipment, presumably to aid in the inspection of the radio equipment by the FCC field offices.

### REPORT FROM I.M.S.

Though it's a bit far off at this time, we want to announce that the dates for the International Modeler Show at the Los Angeles Convention Center have been changed from March 10, 11, and 12, to April 28, 29, and 30 . . . and that's 1978. Reason for the accent is that several people showed up at the Center *this year* on Saturday, the 12th. The Center management was quite impressed with the eagerness expressed by spectators who would line up a whole year ahead of the opening!



Our 3-1/2 year old 1/2A scale model, Belinda, doing her thing with MODEL BUILDER stickers during the WRAM Trade Show in White Plains, N.Y., the last weekend in February. In no time at all, she learned how to place them over the *Flying Models* stickers!

Main reason for the date change was to be more accommodating to the exhibitors. The previous schedule would have had them running from New York, to Los Angeles, and back to Toledo, all within 5 weeks. However, even before the change, the booths were practically sold out just a few weeks after the first announcement.

### THINGS TO DO

"Will the real "Pappy" Boyington please stand up!"

If you attend the Saturday night banquet during the 4th Annual Boise (Idaho) Area Radio Kontrol Society Model Airplane Symposium, the guest speaker may be introduced in this fashion . . . 'cause that's who it's going to be!

This affair will take place at the Holiday Inn in Boise, Idaho, on April 30 and May 1, 1977. Over 150 exhibitors are expected, and a number of industry representatives.

For further information, contact the Symposium Director, Jim Booker, at 5657 Marcliffe Ave., Boise, Idaho 83704, or call him (home) 208-376-0624, or (office) 208-384-2215.

\* \* \*

Canada's "Largest Radio Control Model Aircraft Exhibition & Flying Show", sponsored by the Hamilton Flying Tigers, will take place on May 7 and 8, 1977, at the Nelson Recreation Complex, 4235 New Street, Burlington, Ontario, Canada.

The 7th Annual affair features prizes to third place for static exhibition of models in about 16 categories, distributor displays, a Swap Shop, and two flying shows daily. Carl Small is Exhibition Director.

\* \* \*

To all radio control boaters . . . the Longview Radio Control Boaters and Flying Models Magazine are again co-hosting a National Offshore Classic at Lake Sacajawea (what?) in Longview,

Washington, on the 3rd and 4th of July, 1977. The Firecracker Offshore Classic will be a two-day event for .20, .40, and .60 Deep-V's on a triangular course. Contact NAMBA Asst. Dist. 8 Director Rick Hollister, 1220 Ocean Beach Hwy. No. 6, Longview, WA 98632 (office) 206-423-6202, (home) 206-423-2485, or LRCB Commodore Vic Roberts, 3172 Field, Longview, WA 98632, 206-425-2389.

Oh, and by the way, if you see anyone there from Flying Models, be sure to tell them you read about it in *Model Builder*!

\* \* \*

If you can manage to do it without becoming a hostage in our nation's capitol, Washington, DC, by all means visit the National Air and Space Museum at the Smithsonian and the storage and restoration facility at Silver Hill, Maryland. The February issue of the NAA newsletter describes it as follows:

"The National Air and Space Museum continues to shine as the brightest jewel in the Smithsonian complex that so proudly shelters and displays our national treasures. The new facility was merely one day short of being 7 months old when on December 30, 1976, *it welcomed its 5 millionth visitor*. Another impressive statistic is that as of the 1st of January 1977, more than 527,420 people have seen the film "To Fly" in the museum's theater which has only a 485 person seating capacity.

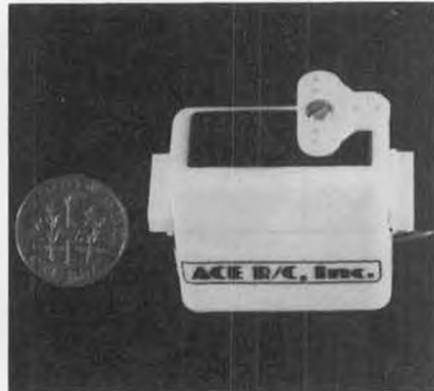
"Not content to rest on its laurels, the National Air and Space Museum revamped its storage and restoration facilities at what is now called the "Silver Hill Museum" in Suitland, Md. It has been open for public tours by appointment since January 11, 1977.

"The Silver Hill Museum is a "no frills" operation. Two hangar-like buildings display air and space craft, engines,

*Continued on page 103*



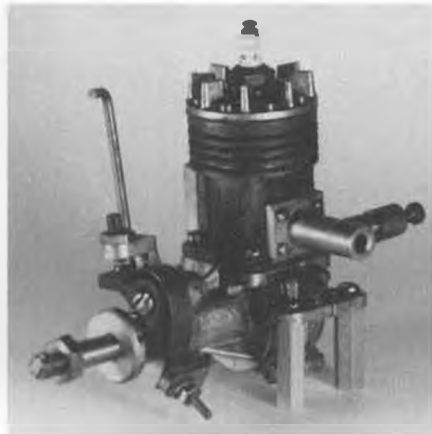
# OVER THE COUNTER



The Ace Micro Servo, only .625 by 1.25 by 1.28 inches, and weighs 3/4 ounce.

● It is April! And even in Buffalo, the model runways will soon start to emerge from all those feet of that nasty white stuff. It is time to be looking skyward, and seriously planning your season's flying activities. In the spirit of the times, MB is proud to be the first to bring you news of an engine that should be the answer to your prayers, regardless of what phase of our hobby you most enjoy.

Described as a true engineering triumph, available either assembled for \$9.95, or as a complete kit, for only \$4.95, this is a product of outstanding designers and engineers who have constructed into this engine everything that years of exhaustive scientific aerodynamic research could produce, geared to the highest possible degree of perfection. Thousands of users all over the country are praising, recommending,



A true engineering triumph! This is the first item described in the text.



Ace GLH II for 1/2A racing.

and endorsing this scientific achievement. It has broken records for amazing performance, and is equally efficient for model planes, boats, cars, or stationary use.

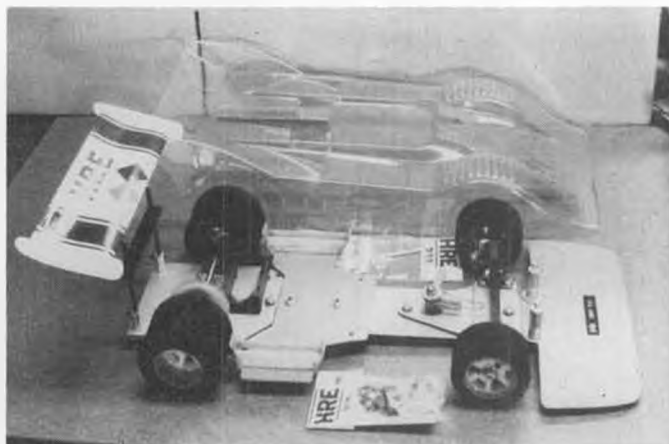
The specs are: .75 stroke, .9375 bore, for a .51 cubic inch (8.35 cc) displacement and is claimed to swing



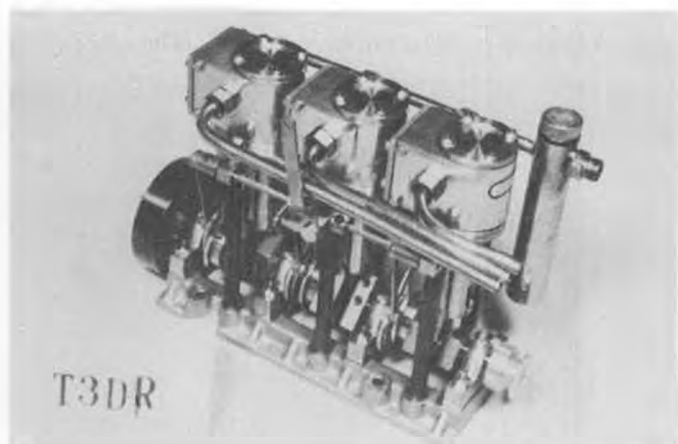
Ace 3-channel Digital Commander. With two servos, it's \$109.95 in kit form.



Rocket launch and power controller, by Centuri.



New HRE race car with adjustable roll rate on both front and rear ends.



One of several steam engines available through California Hobby Distributors.



Wardcraft Marine's "Formula V", designed and used by Frank Ward to set NAMBA record. Mistakenly credited to Ed Fisher in Feb. issue.



Buhl Bull Pup, by Craft-Air.



Peerless Challenger, built from Classic Era Modelplans.



Embryo Mark II, built from Classic Era Modelplans.



The J-BIRD, by Craft-Air.

a 14 x 8 propeller at from 300 to 7000 rpm. The height of this engine is 4-1/2 inches, width is 2-1/2, and weight a mere 10 ounces. The one-piece crankshaft is drop forged, and rotates in a self oiling "Ledaloyl" bronze bearing.

The kit is composed of exactly the same parts that go into the assembled engine. It includes the cylinder, piston, connecting rod, timer, crankshaft, all screws, nuts, bolts, and complete instructions. Every part is fully machined and finished. A screwdriver is the only tool required. Average assembly time is 30 minutes.

This progressive manufacturer, G.H.Q. Motors Inc., New York, NY, can be addressed c/o Model Builder.

\* \* \*

One of the many challenging things about the model building hobby is that

you never really reach the end. There is always something new and interesting coming along. One of the latest developments is electric R/C cars, which seem to be catching on almost with the same speed as are electric airplanes.

A recent entry into this particular race is MRC/Tamiya, with a realistic looking and performing Porsche Turbo RSR.

Featuring truly proportional steering and two forward and one reverse speeds, it also has variable gear ratios (from 4.6/1 to 19.4/1) for indoor slow running and outdoor road-scorching speeds. It is driven by a powerful electric motor which will use either dry cells or rechargeable nickle cadmium batteries. All gears are precision molded from Delrin, for long life and powerful performance. Semi-pneumatic rubber tires and a realistic rear suspension result in a smooth handling machine on all surfaces.

The MRC/Tamiya Porsche is 14

inches long, and over 7 inches wide. It has enough room for any present-day, two-channel radio system. The Porsche kit is \$49.95 without radio, or \$149.95 with the two-channel radio system.

Look for it at your dealers, or write Model Rectifier Corporation, 2500 Woodbridge Ave., Edison, NJ 08817.

\* \* \*

The Ultimate Airbrush, manufactured by Bammco Inc., and marketed by Model Builder Products has undergone some packaging and accessory improvements. The basic airbrush itself has not been changed; it already works so well that the only limitations usually encountered are those of the user.

The material container has been changed from glass to a plastic material impervious to any of the solvents found in any of the paints in common



Brown CO<sub>2</sub> tanks and charger adapter, available through Peck-Polymers.



The Peck-Polymers "One Nite 16" is now convertible from rubber to CO<sub>2</sub>.





Cox Pee Wee .020 with Davis Diesel conversion head.



Davis Diesel "Stax" exhaust stack is silicone rubber, stretched and slipped into place.



Engine accessories and service available from Dick McCoy.

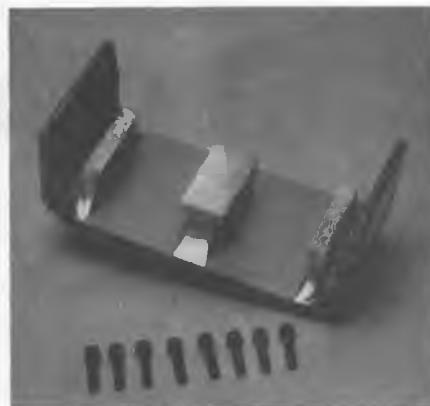
use. Two sizes are available, the 2 ounce as furnished and a 4 ounce, complete with top and hardware for \$2.35. The Air Cap, as supplied, and which is attached to the Air Can, has been changed for easier and more rapid assembly.

The colorful and attractive sealed package also serves a functional purpose. It includes a molded plastic insert which protects and cushions your Airbrush while it is enroute to you, so not even the worst cases of shipper's football can damage it.

A number of useful accessories are available, and described in detail on a list enclosed with each Airbrush. Some of the most used are the Small and Large Needle Valves, to supplement the Medium type which is normally furnished. These are priced at \$6.45 each. Heavy Duty Hoses, with fittings for

1/4 inch compressor fittings are available in various lengths; an eight-footer is priced at \$4.00

You don't have to mention that you



Motor mount for twin engines in boats, by Octura.

read about it in MB, when you order your Airbrush and accessories from Model Builder Products.

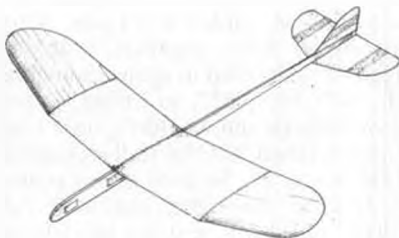
\* \* \*

The first competition R/C Car chassis kit to have front and rear end adjustable roll rates has just been announced by Chuck Hallum, of HRE Inc., P.O. Box 4658, Irvine, CA 92716. This feature permits the operator to adjust the relative front-to-rear roll rates to attain the best performance on any track surface.

Designated as the HRE 1500RS, this kit is priced at \$169.95. As a special introductory offer, HRE is giving the option of a 10% discount, or a free Parma body.

The original HRE chassis kit, the 1000, winner of the 1975 Roar Nats, and numerous other events, is still available at \$144.95. Write for more

*Continued on page 81*



F.R.'s Glider, by M&P Enterprises.



Dallaire Sportster O.T., by M&P Enterprises.



"Duellist 2/30" twin sport and pattern ship by Dave Platt Models.



MRC/Tamiya Porsche Turbo RSR, for 2-channel radio. Electric power and variable gear ratios.



The Ultimate Airbrush, marketed by Model Builder Products. New packaging and accessories in stock.



# MISS ARPIEM

By Dr. DEE MATHEWS . . . Old Timers have often been called the perfect training ships for radio control. If ever a perfect example had to be named, this would have to be it! Original design by STEVE KOWALIK.

● Through the thirty plus years I've been building "toy" airplanes, I've been fortunate enough to have built a few models that far exceeded my always high expectations. Every once in awhile, that peculiar chemistry of luck, skill, and intuition combine to produce a model of exceptional merit. "Miss Arpiem" is one of that kind of model.

Frankly, I started off on this project by accident. I became aware of the relationship between Steve Kowalik and Bill Northrop, and cunningly decided Bill would publish something by Kowalik if I submitted it. Looking through John Pond's plan list, I eliminated Miss Delaware (*Model Builder* had it brewing) (*still brewing. wcn*) and the Ideal Air Chief (ugly). But what was the "Miss Arpiem"? I honestly had never heard

of it, could not recall ever seeing a photo in my magazine collection . . . a total unknown to me. Not wishing to remain in ignorance, I rushed an order off to John. Several weeks later the plans arrived . . . what a startle! Kowalik had designed a pretty little cabin job with strong esthetic appeal.

. . . But what does the name mean?

I immediately began red-penciling the needed modifications onto the plans and commenced construction. The resultant model was first flown with two channels, and a Super Tigre 23. My golly . . . talk about a climb . . . the darn thing flew like an F.A.I. power job, twenty seconds got it way up there. I could fly the power pattern with trim tabs *only*. Great competition potential, but hardly relaxing. After twenty flights or so of

this type of thing, I decided she was too nice a lady to go flying about like a scalded cat. So off came the .23 and shut-off tank, and in went three channels and an O.S. 15 R.C. Now she was a gentle kitten, able to do beautiful touch-and-goes . . . a delightful 15 size sport ship.

. . . But what does the name mean?

As is always the case in great love affairs, this one ended in tragedy. After many happy hours together, I abused the lady and she died in agony. Someone said, "Will she spin?", so I tried . . . not in low throttle she wouldn't, nose high she just mused 'till the stall recovered, no fall-off at all. So how about power on? Not to the right, but with full throttle, full down, and full left rudder she would, that is 'till her left wing broke off! She plunged to the ground like a wounded bird. Oh, the savagery of men! Oh, the quixotic moments of lovers. I done her in . . . dumb, dumb, dumb. Fortunately, all is not lost, *you* can build her sister and have your own affair of the heart, I'll never tell. If anyone is still reading this, the following is a building outline:

## GENERAL

The model is completely legal for SAM events (A, B, or C, cabin, and Texaco). (*Check local rules on Texaco. Some clubs have a 6 foot minimum span rule. Maximum glow engine displacement is .24. wcn*) All dimensions are exactly as originally designed; the structure is beefed up, but no sheet for built-up substitutions have been made. The airfoil is the original . . . watch out for illegal substitutions on several currently



Can you imagine a little gem like this going unnoticed all these years? The proportions and lines practically jump up and yell, "Perfect R/C trainer!"





From any angle, "Miss Arpiem" has pleasing lines. Bolt-on wing and stab are not recommended for the novice flyer, and though maybe not as pretty, the good old dowel and rubber bands would be more in keeping with the time of the design, 1938.

available kits!

Landing gear is a pre-formed I.M. Product, H-2 unit, bent slightly as drawn. A satisfactory gear can be bent of 3/32 M.W. if you so desire. The gear is held in place with nylon brackets, screwed and epoxied into the 3/16 ply floor. The floor itself should be epoxied to the spruce longerons. The formers can be fabricated quickly, using typing paper to trace outline, cut out with scissors, spray paper with 3M Sprayment, stick in place on sheet or plywood, and cut out. Peel paper off and sand, really a simple method of pattern making. Use spruce where specified, *do not* substitute balsa. Aliphatic resin glue is used throughout, with exception of epoxy for firewall, landing gear mount, and dihedraling the wing panels. Use plastic wrap for plan cover, waxed paper will weaken glue joints.

#### WING

I usually build wings first to generate some scrap sheet for the remainder of the project. The tips can be fabricated by cutting to match inside placement on drawing, then cutting to exterior outline after assembly. Of course, you may cut out before placement. The tip ribs are cut and trimmed from full chord ribs, then sanded to contour when shaping leading edge, etc. The wings build completely flat and are really simple to construct, so I won't detail a step-by-step procedure. The wing tips are set on top of the bottom spars, with the top spars tapering down into a flair at the outside edge.

Of course, be sure a left, a right, and a center panel are constructed. Shape leading edge, tips, and tip ribs before dihedraling. I prefer to block up the individual tips, sand angle in with a block against the table edge, then assemble against center section with epoxy. After epoxy is set, cut slots for front dihedral gussets with two hack saw blades bolted together, insert and epoxy ply gussets, holding against spars with clothespins. Repeat for middle gusset and bolt-blocks. If you prefer mounting wing and stab with elastics

and dowels, go ahead . . . the nylon bolts are just for fun, anyway. The wing can be covered with a heat-shrink material or whatever. If you are looking for something cheap and strong, consider acetate sheathing as detailed in fuselage finishing.

#### FUSELAGE

The first step in constructing the fuselage is to cut out the fill-in pieces and the three plywood formers. Next, cover plan with film and build a side, using spruce for longerons and vertical members back to C, with balsa from there back. Allow the first side to cure several hours, remove pins that are in the way and build side two directly over side one. After twenty-four hours, remove both sides and separate by popping down center with a table knife. Sand rough edges and remove glue blobs, etc.

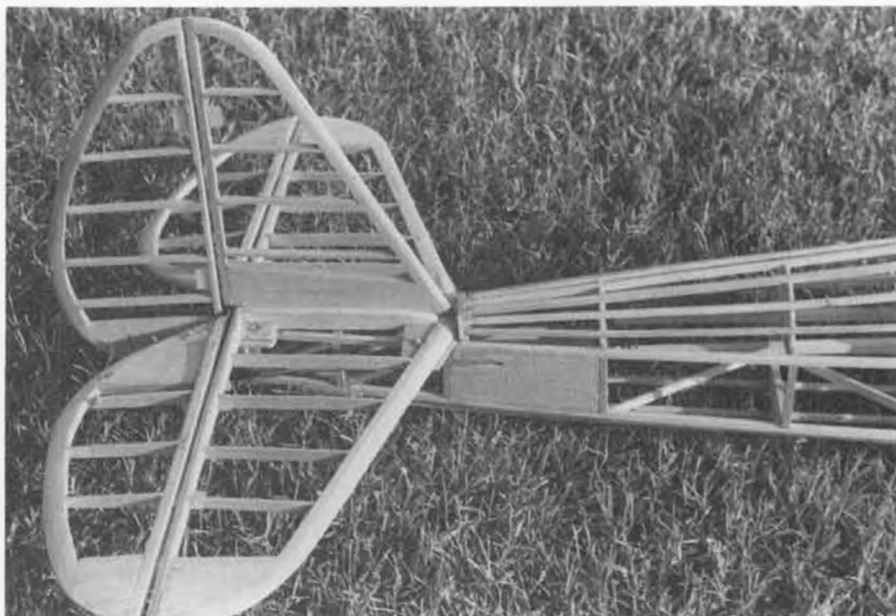
Trim 3/16 from right front, trial fit bulkheads using clothespins to hold. Assemble A, B, and C, using epoxy on A and aliphatic resin for the remainder. Assemble by pinning wing rails onto

building surface. Using a right-angle triangle and a carpenter's square, adjust clothespins and/or C-clamps, until the cabin is square in all dimensions. Add cross members back to C, then allow at least 12 hours for glue to cure.

With wing rails still pinned to building surface, mark the mid-line of cross members. Place a straight edge (yard stick or *straight strip*) on the marks and pull tail post together on the line. "Hot Stuff" the tail post, then fit a scrap of 1/4 x 1 trailing edge stock as a filler.

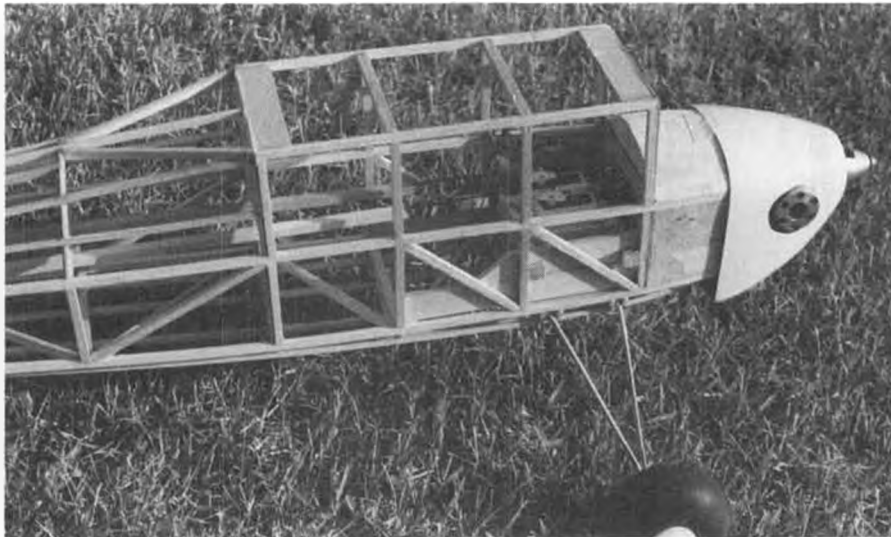
Cut remaining cross pieces of 3/16 x 3/16 balsa, marking middle of each, position each one on the mid-line mark. Complete frame by adding diagonal cross members top and bottom if fuselage is to be covered with heat-shrink, omit if covering will be fabric.

Cut out formers using the stick-and-cut method. Trial-fit to cross members, then "Hot Stuff" into place. Some minor correctional sanding may be needed to give a smooth contour as the 3/32 x 1/4 balsa stringers are positioned. I



Close scrutiny will disclose the blind nuts mounted in plywood plates to hold the stab mounting screws. Use nylon. They might shear before the stab breaks, in the event of an accident.

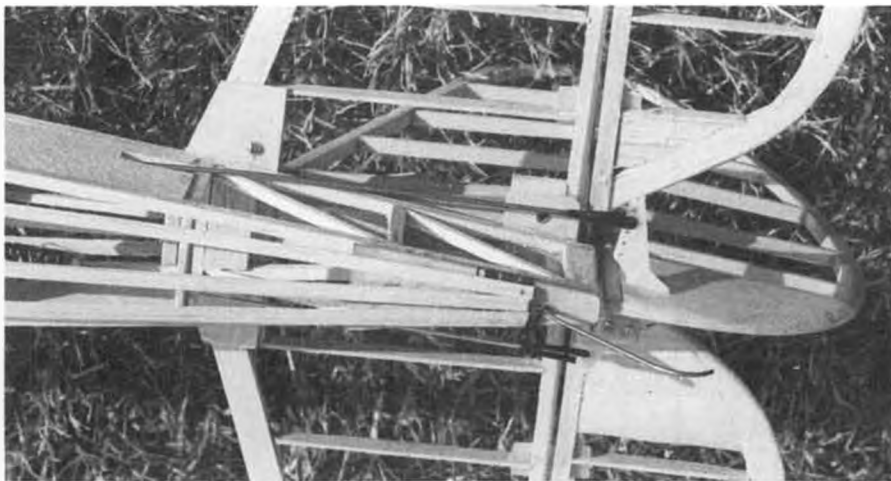




We're glad that Dee changed his mind and didn't use the Sig molded cowl shown here. The idea's OK, but it just doesn't suit in this case. Servos kept well forward for balancing purposes.



The pre-formed I.M. (Japanese) landing gear is clamped in place before adding the bulkheads and stringers. Makes covering a little tricky, but any other method would be design deviation.



Original tail surface spars are located perfectly for making unobtrusive R/C modifications. Steerable tail skid was found to be unnecessary.

like to pin the front end in place, then trial fit, when satisfied. I then "Hot Stuff" everything in place. Refer to structure photo for approximate reference to position of structure. The engine mount and T-nuts should be positioned and drilled at this point. Next, add the scrap ply tank floor, position the tank

and its plumbing, then epoxy 3/16 sheet floor in place. The undercarriage should be installed *before* the bottom stringers are added. Fill around the music wire with balsa scrap to provide "sticking surface" for the covering material.

The cowl top can be cut from 3/4 inch sheet, or laminated from a sand-

wich of 1/4 inch sheet. I merely built up around the tank with 1/4 sheet. Thus creating a hold-down for the tank all in the same step. See drawing for detail of tank shut-off for two channel floater. Complete fuselage by adding tail and gussets, drilling hole for dowels, etc. If you wish to hold the wing with nylon bolts, epoxy 3/4 x 3/16 spruce in cabin top at this time. Noseblock is cut and laminated, using fifteen-minute epoxy. Carve and sand to shape. If the Sig No. 515 ABS cowl is chosen, epoxy blocks to firewall for hold-on screws.

I covered the fuselage with acetate sheathing. I would highly recommend this material for the entire model. The sheathing can be purchased from a fabric shop; it is relatively inexpensive (I paid 90¢ a yard), comes in a rainbow of colors, and seals with 3 to 4 coats of clear. Be certain you have acetate sheathing. I found a woven sheathing that doesn't work at all. Acetate looks much like silk, in that it has a definite grain direction, is shiny on one side, and will not stretch.

The acetate is applied exactly like silk . . . that is, wet, onto a previously doped frame. The wrinkles are pulled out (do not over-stretch), then the edges sealed with thin clear dope. Some shrinkage occurs as the water evaporates; however, much less than silk. Additional tightening occurs as the dope coats dry out. I use a coat of regular dope, then control additional shrinkage by using Lite-Coate or regular as needed.

I have used the acetate sheathing on several models and have grown to prefer it to any covering I've ever used. I would highly recommend it to anyone who is reasonably competent with paper or silk; if you are not, get someone to show you how. Try this stuff, you'll never go back to the high-priced spreads!

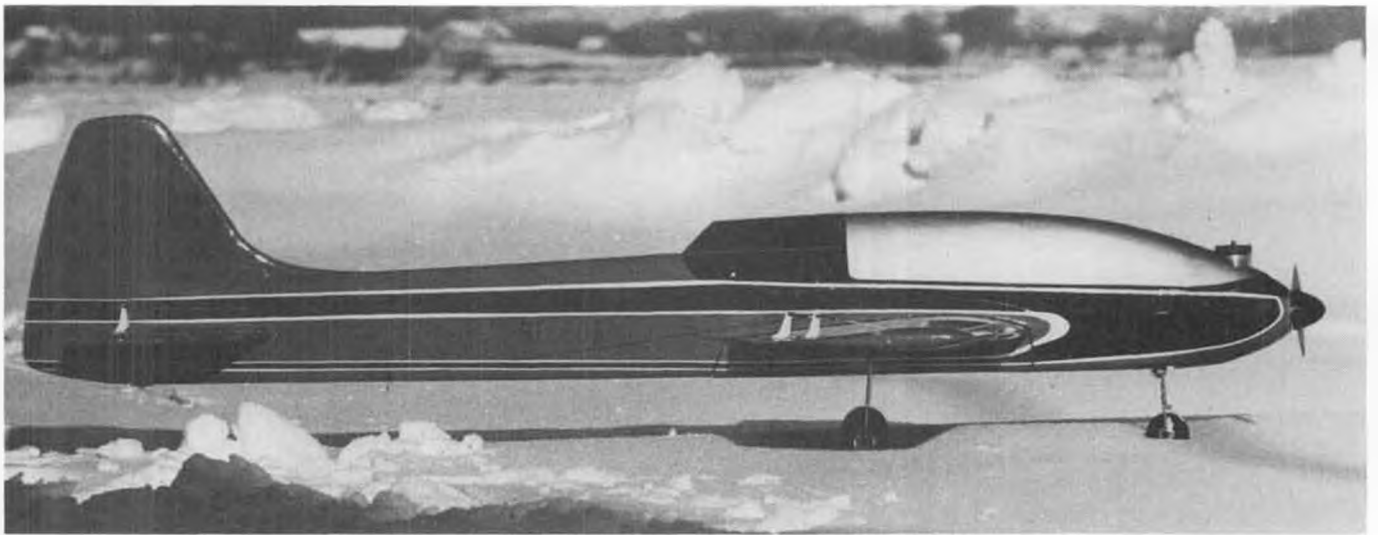
#### TAIL FEATHERS

Granted these look difficult, but they really aren't. The outlines are made using the stick-and-cut method, try to use firm 1/4 x 1/2 strip and C-grain sheet. Everything builds flat, then is block-sanded to airfoil after the hinge slots are cut. The music wire joiner is epoxied in place *before* contouring the elevator halves; the hinges are held with tooth-picks Hot Stuffed into the holes. It works! Pre-drill for large control horns. Place stab on fuselage temporarily with masking tape and drill down into ply stab supports. Install 4 x 40 blind nuts into spruce (Hot Stuff lightly), and insert rudder into slot temporarily.

Fit battery, motor, wheels, etc., then move servos and tray along rails to get a slightly nose-down attitude when resting wing rails on fingers at CG point. The covering on the tail feathers and fuselage rear will move the CG back at least a 1/4 inch. Cut pushrods from

*Continued on page 64*





No, this was not Buffalo, N.Y. in February! It is Goteborg, Sweden, home of that country's best precision aerobatic R/C flier, Bengt Lundstrom. This is the follow-on in his "DFH" series, No. 19. We presented "DFH-18" last June (plan 6771). Where's the muffler? See below.

# 'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

## BIG IS BEAUTIFUL!

It appears that we're very much NOT alone in our thoughts on Mammoth Classic Scale. In addition to many letters from readers who are enthused by our proposition, it appears that at least one individual has already "been there." Dick Phillips, 853 Reid Cresc., Prince George, British Columbia V2M 3W6, who is a Zone Director for MAAC (that's Canada's AMA) wrote the following piece on his experiences with a large scale project. It was published in the February 1977 issue of "Model Aviation Canada," MAAC's newsletter, and was entitled "Big Is Beautiful."

"I recently got my hot little hands on one of Ron Shettler's new Quadra engines (of which more later), and started looking around for a place to put it. With the kind of power it produces, the aircraft had to be big, so I immediately thought of the nine foot Cub which has been around for quite some time. I got the Sid Morgan plan for the J-3 (see MB's Feb. '77 cover. wcn) and then did some thinking. With the current cost of balsa (how well I know, I sell it in the store!) I wanted to try to keep the cost down a bit. With a nine foot wing span and a 16-3/8" chord, there is a small balsa log involved just in the wing, never mind the fuselage.

"Here in central B.C. we ship large quantities of Western White Spruce world wide. While it isn't Sitka or Engelmann Spruce, there is some around that is fairly clear and straight grained. Through a couple of contacts, I managed to obtain two eight foot two-by-fours that were almost entirely clear of knots and which presented a very nice straight

grain. One of these eventually became most of the dimension material for the Cub. Wing spars, longerons, trailing edge stock and the like were cut from the spruce and substituted size-for-size for the balsa called for in the plan. Formers and wing ribs, etc. were made from Sig's Liteply, a poplar plywood that is tough and yet quite light. It cuts well with the average modeling knife, is 1/8 thick and three-ply. It's a bit heavier than equivalent balsa, but at least three times as strong. I wanted a big airplane but also wanted a tough one as well. There is, unavoidably, some balsa in the Cub; the wing sheeting, wing tips and stab outline, as well as nose sheeting are balsa, and that's hard to find a substitute for, although I would bet that a good

grade of artist's board could be made do with.

"Basic construction was according to the plans, although I made a change in the strut mount where it connects to the fuselage, using a solid aluminum plate right through the bottom of the fuselage and connecting the strut ends to it with bolts and blind nuts.

"I kept pretty close tabs on the cost and ended up as follows: fuselage ready to cover \$13, wings \$3 each, tail feathers about a buck for a total airframe cost of approximately \$20. I must admit that the balsa wing tips and stab outline came out of the balsa scrap box and are not included in the above figures.

"All up dry weight is 16 pounds, for a wing loading of about 20 ounces to the square foot. I made no allowances for differences in balance except to go a bit heavier aft to balance. One item here was a solid spruce block on which the stab mounts. It's a fair size and must weigh a few ounces, at least.

"Covering is Super Coverite, and it took four sheets, so cost there was about



There's room to spare under the large and unusually shaped canopy of Bengt Lundstrom's new pattern ship. And now you see why it has that shape! Nice solution to a new problem.

twice the cost of the framed airframe. First time I ever covered a \$20 airplane with \$40 worth of material!

"The balance, by the way, was very close. The CG ended up a bit (1/2 inch) ahead of the marked CG in the plans and it required about an ounce and-a-quarter in the left wing tip, probably due to differences in material weight in the wings. The wings come off separately and the thing can be moved in a small station wagon.

"Briefly, the Quadra engine is a 2 cubic inch, two horse chain saw engine that has been adapted for model use. It burns gas and oil mixed for 2 cycle engines (i.e. 1-20), at less than a dollar a gallon and runs longer than a glow engine on an equal amount of fuel, so is doubly economical. It has a magneto and has been run against several of the well known radios without problems. Mine is an EK, and there have been no problems with the magneto affecting the radio. There is a suppression kit available for it if your radio is twitchy around the engine, and I added an aluminum facing to the firewall just for insurance.

"The engine is equipped with a Tillotson pump/carb so fuel supply location is not a problem. I used a one quart tin located right at the CG, and it will give in excess of two hours flying on one fill for less than 25 cents. Try that on your super-duper Schneurle .61 with pump and carb! There have been several hundred thousand of these engines built and used around the world and average life expectancy in our hobby is approximately 200 hours. That's a whole bunch of pretty economical flying, guys! Parts are available, if needed, at your local saw shop, and the 18 x 6 props run about \$3 each. No battery required and it can only fire at top dead center or thereabouts, so it's not quite as easy to get your fingers rapped on kick-back.

"The internal arrangements are pretty straightforward. It has a steel chromed liner, aluminum single ringed piston and



Hurry with the pictures, Bengt, it's sinking into the snow! Clean frontal area provided by the enclosed exhaust system is obvious from this angle. OPS 60 RCA engine. More info in text.



Now we're talkin'! George Bussman's 1/4 size (10 ft. span) Curtiss Robin took first place in Post WW I Non-Military at the WRAM Trade Show static display competition. Weight 16 lbs.



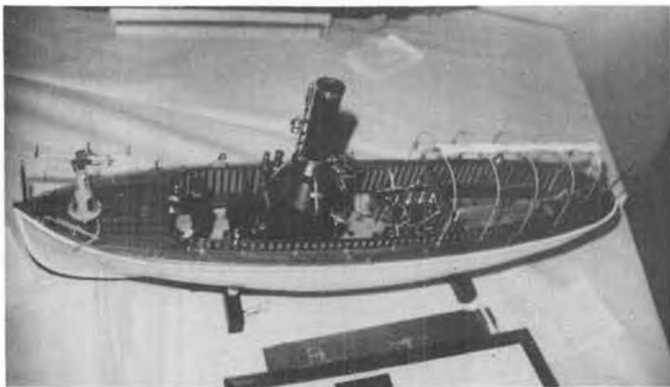
Mike Granieri displayed Francis Tlush's original 1936 Texaco Trophy winner at the WRAM Show. Looks like it could go right out and fly. Hmmm . . . wonder what engine it used?



There was no category for R/C Garden Equipment, so the builder (sorry, missed the name) entered it in Sport Aircraft.



Model Builder's youngest staff member put in a long weekend of "sticker sticking" at the WRAM Show.



The polished brass on this operating Steam Cutter, by James Seaton simply knocked your eyes out! We judged it best over all types.



We're sorry to have missed the builder's name on this freighter, the "Karen Peano". Hate to have the dust removal contract on this!

swings the 18 x 6 club at a peak of 8,000 turns, idling somewhere down below 1,000, which is pretty nice. The mount provided is a bit small and I had another larger one made locally for \$5. The carb has a high and low speed needle, and the idle stop is much the same as any of our usual engines. The adjustment screws are awkward to get at, and care is needed to set it up while it is running.

"Transition from idle to top turns is smooth and without hesitation and is a delight to see. It's a pretty impressive mill, and the price is right in there between a standard .40 and a fancy .61. All in all it is something pretty special. (We're trying to get more info. wcn)

"Now for the fun. I taxied mine around quite a bit for a couple of reasons. I wanted to be assured there wouldn't be any problems with the radio and engine combination (there was none), and I wanted to get used to such a biggie (there were some problems). Being a tail dragger, it will ground loop fairly easily so you need a gentle finger on the rudder stick. When it does go round-and-round, it doesn't drag a wing tip, the gear is pretty wide and it stays on it's wheels very well. The big oak Punctilio props will break, although there is loads of tip clearance as a tail dragger. Just don't run it into the front bumper of your Volvo station wagon!

"The taxi session was followed (after about a week waiting for favourable weather) by a flying session which was

a revelation. If you have ever seen that big Cub with glow power up front, it may have turned you off. The ones I have seen have been a bit piggish in performance and are pretty tender due to the need for building very light in order to fly at all. This big bird is an angel. It took off and climbed out on half throttle and was clear off the ground and ten feet high less than 75 feet down the strip. It maintains altitude on less than 1/3 throttle and climbs at a 30 degree angle with the throttle fire-walled.

"So far, it has had only a couple of flights of about 25 minutes duration, and is currently undergoing some minor changes to ease my mind. They probably aren't necessary but it makes me feel better!

"Next in line for the building board (you need a wooden door for these big birds!) is a 1/3 full size Pitts S2A with 80-inch span and a 13-3/8 inch chord. Wing loading should come out around 21-1/2 ounces to the square foot, and it should be a performer with two horses in the engine room. The Quadra has a shaft front and rear, and the thought crossed my mind that a Cessna Sky-master with both props running off the same engine might make an interesting proposition and if a Super Kaos .40 is good and a Super Kaos .60 is better, how about a Super Kaos 200? . . . hmmm . . . Anyway, if you like big airplanes and the cost has kept you away, try my solution. You'll like the

performance and you'll love the savings. You can actually build and fly the biggies at less cost than kit-building the small ones. Small being anything with a wing span less than eight feet!

"I'll be surprised if the Quadra does not result in an "unlimited class" in aeromodeling for birds using engines of 2 cu. in. or better. It sure makes a super detailed job in scale that is much easier and truer, as you'd be working in something around 1/4 to 1/3 full size. I think the possibilities are pretty exciting, and I intend to continue in the BIG area and would be pleased to hear from anyone else who is interested in large models. Good luck and good flying."

Before going on, we'd like to suggest that you read our comments on using corrugated cardboard for model construction, as discussed in the U-control article on "Box Boy." Although we haven't given many specific examples of uses for corrugated cardboard, the ideas suggested should fire the imagination of our more inventive readers.

Bob Petro, a member of the Coeur d'Alene (Idaho) Aero Modeling Society (CAMS), and a regular contributing editor for the dealer magazine "Model Retailer," really goes for the MCS idea, and also his parallel thoughts with us on the matter of Sport Scale.

"Bill, there is more interest growing in your Mammoth Classic Scale idea. It's frustrating to me though, because I'm torn between what to build. I'd like to do my J-3 Cub, but then, everybody



A mouth-watering collection of engines by several displayers at the WRAM Show. No wonder the O.T.ers are switching to glow!

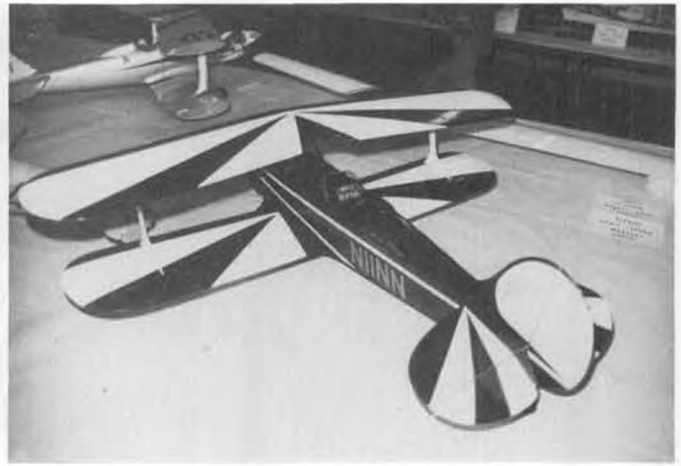


Danny Sheelds dismantled the stab of his Boehle "Giant" and built this Powerhouse from the parts! Placed Second in O.T. category.





"Listen, kid. You talk your old man into subscribing, and I'll give you a whole bunch of stickers!"



Finish and cockpit detailing on this Steen Skybolt by Lynn Carpenter was exceptional. Wide-angle lens distorted tail.

will be building one of those. I believe I mentioned to you that I had flown many hours in a Stinson SM1 'Detroit' while a member of the Antique Airplane Assoc. (San Diego Chapter). I'd like to do a model of this one but 3" = 1' would be 135 inch span! I'd need to swing an 18 inch prop just to clear the dummy cylinders! Maybe your idea of a Forster 99 is the right approach? (No, but that Quadra looks good! wcn)

"I also think the large pipes would be good . . . such as a PT-3 or a Jenny. You'd see a lot of 'modern' flyers find out just what a rudder is, for an airplane model of this size, when they give left aileron and see the nose of the plane yaw to the right! Some might even discover what a true sideslip and a real spin is like, when they fly one of these fantastic models. (I'd sure make one of the toughest pattern judges you ever saw because I have flown the full size aerobatic ships and believe me, a lot of these so-called R/C aerobatic flyers aren't even close with these maneuvers. Maybe that's why they won't let me judge pattern around here (but like me to judge scale)! (Let's face it, Bob, the modern pattern ship flies like an aerobatic jet, not a prop driven stunter. wcn)

"Speaking of scale judging; I feel that Sport or Stand-Off-Scale is in trouble if the judging distance is not increased to 20 feet minimum and only items visible in flight should be judged.



More Sport ("Eyeball") Scale ships entered than any other category. Winners were not the super-detailed "Chicken Scale" entries, we're happy to say.

We must keep this event as wide open as possible for the novice, to encourage him to participate. I'm not against the caliber of detail I see appearing on Sport Scale ships these days, I just think it's unfair that the novice is getting discouraged by it. We have well over 50 very good R/C scale modelers in the Inland Empire area, but you seldom can get more than 5 or 10 to a Sport Scale contest, and for this very reason."

Bob, we're going to agree and disagree with you in the same breath. We agree with your feelings about the degree of fidelity that should be expected

of a Stand Off or Sport Scale model (What the hell, AMA named it "Sport Scale," so let's stick with it. The nomenclature we object to is "AMA Scale," which sort of implies that Sport Scale is something other than AMA. We feel that another name, such as "Precision Scale" would be more descriptive and at the same time, less discriminatory . . . whoops, back to the main subject!).

Both detail and workmanship should be subordinated in Sport Scale, and the best way to handle that is to back off until you can't see them! Neither can

*Continued on page 101*



Best Post WW I (Military) Scale entry was this B-26B, by James Fundak, whose P-47N was judged Best In Show.



We missed the name on this nicely built Antic Bipe. Room was emptied while we judged models (and took photos!).



Winner of the New Zealand Nats O.T. Events, Dave Richardson and Struhl Nomad Conv.



Kraft Systems' Production Control Manager, Jack Albrecht, built this pretty Super Cyclone powered Scientific Mercury. Switch and rudder horn for R/C just barely detectable.



# PLUG SPARKS

By JOHN POND

● In line with presenting the best in old timer flying (whether it be free flight, R/C assist, controline, etc.), this columnist is proud to present another "beat" (we used to call them scoops). In an exclusive interview with Dick Dwyer, Region II MECA Coordinator, we have a report on the New Zealand Old Timer Events at the NZMAA Nats that should interest any modeler.

It all started in 1976, when Dick Dwyer decided to take a vacation in New Zealand. After some correspondence, he found he could fit his time to coincide with the New Zealand Nationals held in their summer (January coincides with July here).

In his preparations for traveling, Dick acquired quite a few prizes to be given at the New Zealand O/T Nats. Among these were five engines; a Remco .29 from Ralph Mrock, a Super Cyclone from Karl Carlson, a Vivell .35 from

Mark Fechner and two from Dick himself, a Cameron 23 and a Forster .29. Well worth noting is the fact that these engines were all new in the box! Not content with that, Dwyer also solicited prizes from Pond O/T Plan Service, several local hobby shops, and donations from various MECA members. The New Zealand boys got a real surprise at the trophy awards when Dick started handing out the goodies!

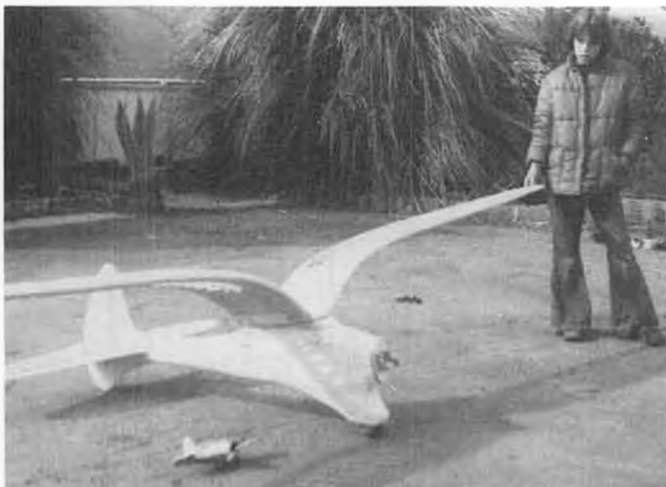
To go to New Zealand, flying is the only way, of course, when you are limited to three or four weeks vacation. Dick suggests that you do not take the non-stop flight, as that one is entirely too long to stay cooped up in an airplane. However, the trip back, where the plane stops at Tahiti, is no better, as the French officials will not allow you beyond the confines of the airport administration building! What a tremendous contrast in hospitality after



Our New Zealand O.T. Nats reporter, Dick Dwyer, San Jose, placed 7th with new Zipper.

New Zealand!

Dwyer was thoroughly impressed by the New Zealand hospitality! Dick sez that every town he visited was a show in itself. As a matter of fact, this Californian caused such a furor among the Kiwis (as they like to call themselves), Dwyer was prominently featured on the front page of the Bay of Plenty Times in Tauranga on Jan. 18. As



Cliff Silva will tackle anything! This is Winnie Davis' "Big Gull" . . . all 13 feet of it! Look out, Texaco contestants!



Dick Tanis and his own original 1938 design, Yankee Clipper. Won Craftsmanship award, plus Class C. Looks good, flies good.



George Clapp (Fokker Trimotor, Aug. '76 MB and others) built this Baby Cyclone powered original in 1936.

pointed out many times, the United States is the only country that regards model airplanes as toys. All others take model flying as a serious sport like golf, tennis, etc. This is truly a shame, as the Americans are regarded as the leaders in this field.

When you talk about southern hospitality, Dwyer sez New Zealand is the best. Dick spent all of his time staying at various homes; to mention a few; Snow Fenn (Wellington), Bill Cooksey (Gisbourne) Ian Henry (Christchurch), Bill Rounds (Christchurch) and many others. The average bill-of-fare down there consists of lamb, mutton, or beef. Most of their plates feature lots of fresh vegetables. As he points out, their mutton tastes different from any he has eaten, being fairly palatable. Actually, if one tires of this fare, there are always hamburger stands similar to the American McDonald's that will relieve the tedium.

From the standpoint of an engine collector, Dwyer is to be envied, as he was strictly in virgin country where no American Collector had been before. Dwyer came well prepared with many American engines for swapping. Surprisingly, he was allowed into New Zealand with no duty, and upon return to the USA, paid only about six dollars for used engines that he had acquired in swaps. Wotta good deal!!

Before attending the New Zealand Nationals held Jan. 2 through 7, 1977, Dwyer started from the north end of the northern island of New Zealand (there are two) and worked his way down to Fielding, the site of the Nationals. Fielding, incidentally, if you can't find it on the map, is near the main town of Falmerston, on the plains west of the mountainous range running down the middle of New Zealand. (These are



Back in 1940, Randy Wilson ran a hobby shop in his basement. Note the 29¢ Burd Korda kit special on the right.

sometimes known as the Southern Alps).

Dwyer was struck by the similarity of the roads to those of Canada. All roads were two lane except when within 10 or 15 miles of a large city, where they promptly became what is known as "politicians' freeway". These four-lane roads run out of town generally as far as the airport and then promptly peter out. Anyone arriving via the airport is impressed by this modern freeway system. They should try the connecting roads between towns, narrow and winding! However, traffic is quite light, so transportation turns out to be

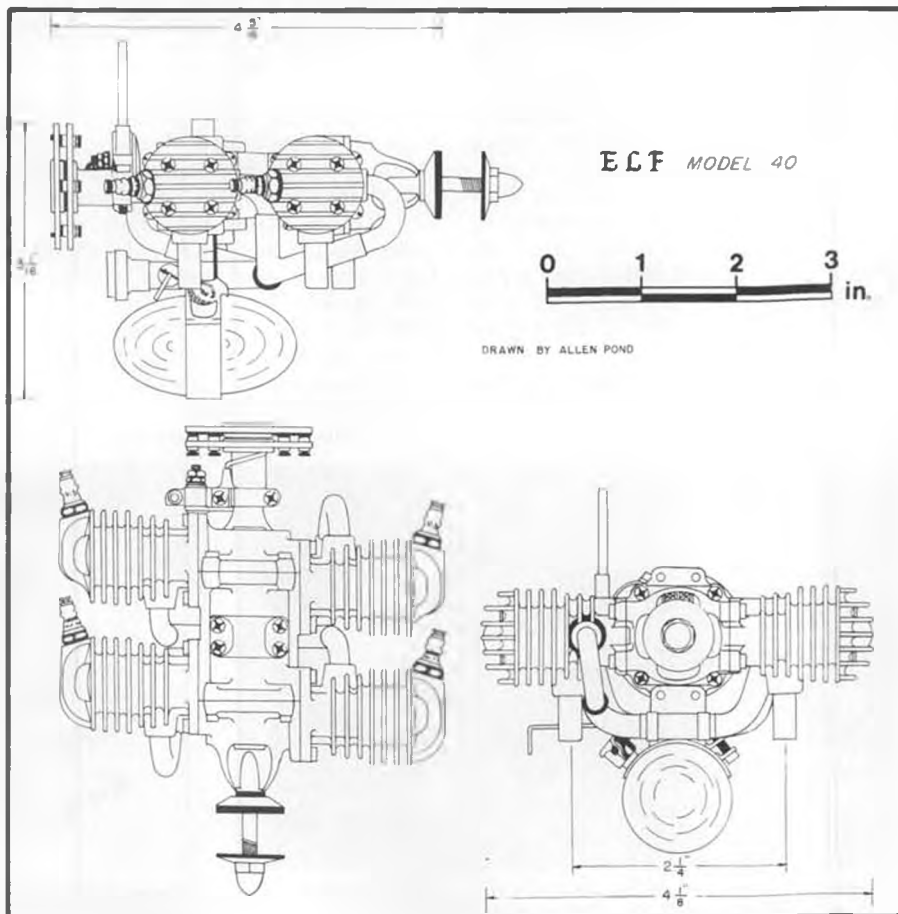


Snow Fenn, originator of O.T. activities in New Zealand. For a change, he is taking pictures instead of flying.

excellent.

In response to the columnists' questions, the best beer down in Anzac land is Dominion Brewery Bitters Beer, a pilsner that has body like the good German lager beers. Don't say you don't give you the "straight skinny"!

Arriving at the Nationals, the weather was absolutely beautiful. Of course, when the contest started, the weather immediately became abominable! Dwyer actually carted a Forester 29 powered Zipper (in a special foam form in a suit carrying bag) just to compete. The Zipper was completely untested, but trust a Goldberg design to be stable and literally fly off the drawing board. In a driving rain, the Zipper, in its first flight, was able to register a creditable







Plans for Donald Evans' Berliner Joyce in the February issue rang a bell with Russ Barrera, San Marcos, California. He had a collection of photos, taken by Warren Shipp, who now lives in San Diego, of the original airplane. Though a little late, they're too good to pass up.

seventh place in a field of 18 contestants for the O/T Precision Event.

The amount of contestants for this event may seem small, but the old timers are catching on. This year featured double the amount of *official* entries. Also worth noting is the time slot assigned to this event, which consisted of early morning and late evening flying. However, Dwyer found out you could actually fly anytime of the day as the entire Nats are quite low keyed affairs.

Let's not get the thought the New Zealanders are not vigorous competitors, it should be pointed out that the NZMAA has 1200 members for a two million population. Compare that with 66,000 for 218 million in the United States!

Also noted at the New Zealand Nationals, is that everyone flies darn near every event. This calls for a tremen-

dous amount of model aviation enthusiasm. When a contestant gets through with the six day session at these Nationals, he's had his fill of flying! While on that subject, among the twenty some odd events is one called Aggregate Flying. The idea here is to register as much time in the air as possible in a half hour. That'll make you hustle!

Overall, the U.S. modelers could learn from their New Zealand cousins about enjoying the Nationals. Winning is not that important. As a matter of fact, Dwyer states the whole meet is lower keyed than the SAM Champs! Let's take a look at the results (to fifth place):

#### VINTAGE GAS

1. Dave Richardson (Nomad Conv.)
2. Bill Cooksey (Buccaneer)
3. Vince Keats (Dodger)
4. Ron Murgatroyd (Dodger)

#### 5. Bevin Dunn (Timers Nightmare) VINTAGE RUBBER

1. Bob Harfield (Korda)
2. Reese Jones (Korda)
3. W. Cardiff (unknown)
4. Paul Havill (unknown)
5. Ann Tambie (unknown)

#### VINTAGE GLIDER

1. Bevin Dunn (N.Z. orig.)
2. Reese Jones (N.Z. orig.)

For those contemplating next year's New Zealand Nationals, the site has been established as Hamilton in the northern island. You can figure on the first week of January as the date of the meet.

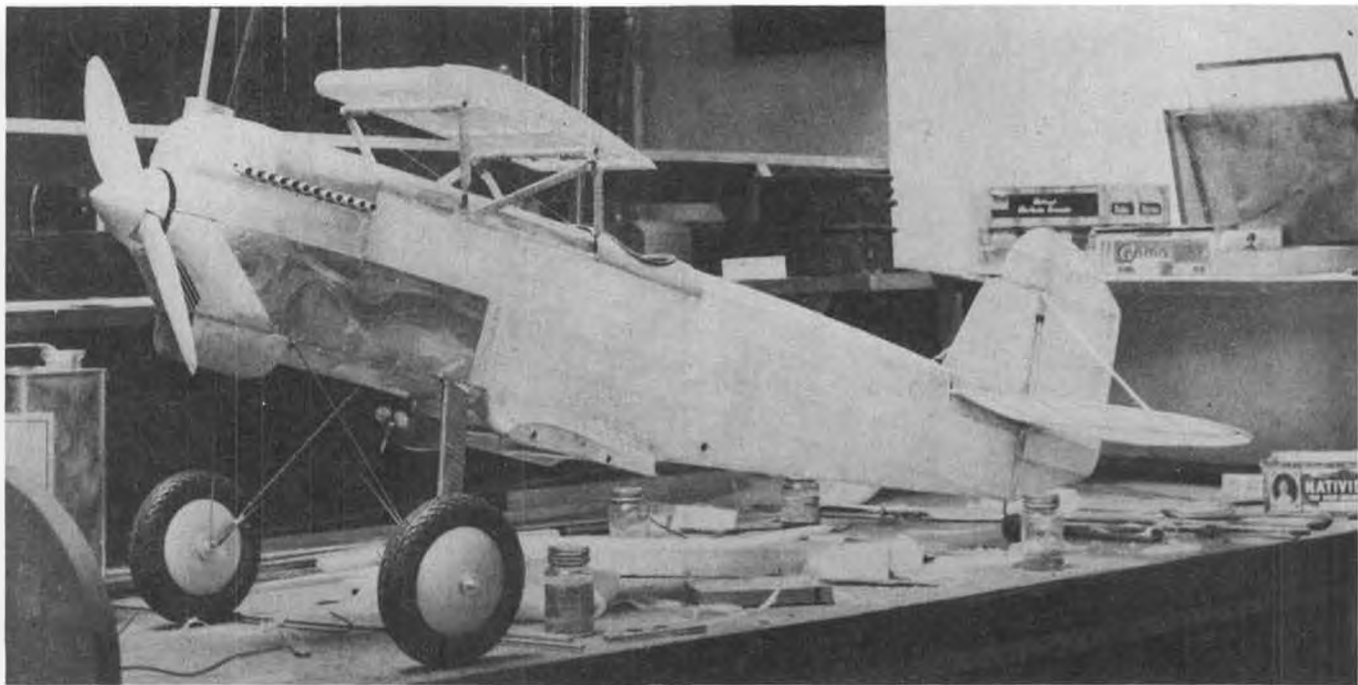
In closing off, Dwyer, an enthusiastic engine collector, offers the following tidbits about New Zealand engine collecting. The Pepperell Engines of Auckland, particularly the "Acme" engines, are going to be produced again in sizes ranging from .04 to .60. In his meeting with Pepperell, Dick gleaned



Ian Henry, who also flew at our 50th Nats O.T., flew his ignition powered New Ruler in the New Zealand Nats O.T. events.



Gordon Coddling's collection of O.T. scale model. Seems as though he has a hang-up about covering! Gordon's from Kingman, Arizona.



Remember those ashtray tires? Evans later replaced these with lighter gas model wheels. Note air-driven engine timer between rear LG struts, and metal panels on nose of fuselage. Pretty advanced construction techniques for 1935! Looks like an Angus prop.

the foregoing information. For those USA collectors who wish New Zealand engines, Dwyer went to N.Z. with 75 engines and returned with a like amount. If you have any wants for a particular N.Z. engine, get in touch with Dwyer. Like an engine collector, he loves to trade!

#### ENGINE OF THE MONTH

When Dan Calkin started producing ignition engines, it was in the usual practice of the day; single cylinder, long stroke, and emphasis on economy. These features were dictated by the event(s) of the day, wherein a ration of fuel was given per unit weight of the model.

The single cylinder Elf (as reported

in the November 1976 Model Builder) could run 40 minutes on an ounce of fuel! However, the power output was only about 1/32 H.P. With the limited engine run rules starting in 1938, the whole concept of engines changed. The emphasis was now on power and the ability of the model to gain maximum altitude in the allotted time.

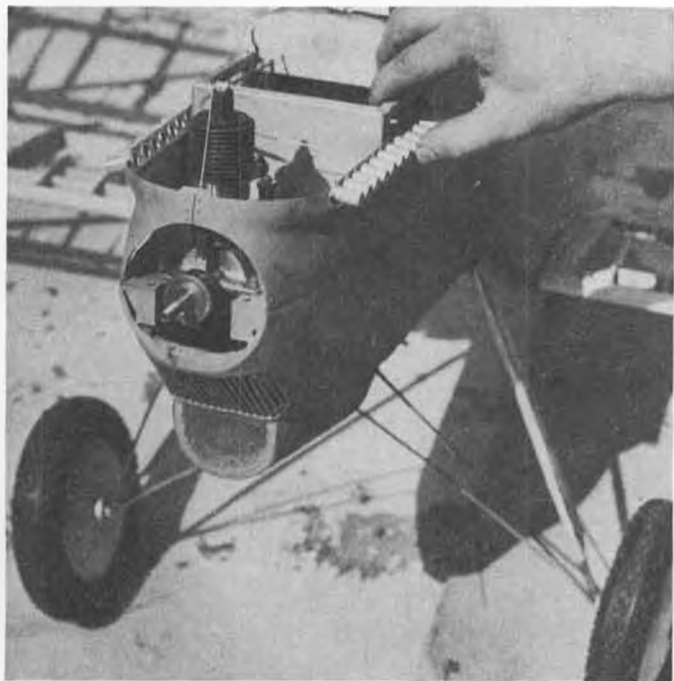
Rather than abandon a proven design, Dan Calkin (an ingenious fellow) decided the easiest way was to use what he had and make a twin out of the single to give a displacement of .198 to coincide with the new engine classification; A, B, and C.

The twin was a more powerful Class A

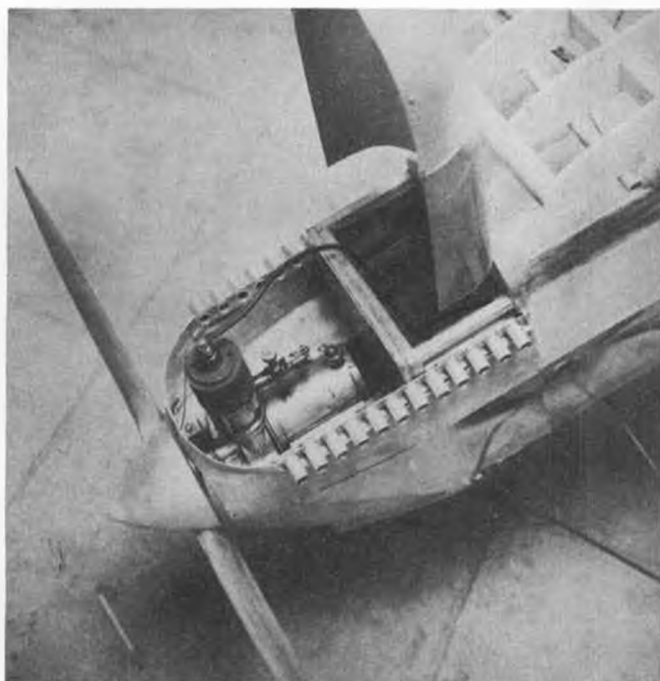
engine. Calkin immediately decided (based on the success of the twin) to just keep hooking up engines in tandem until he had an engine for each class. His four cylinder Elf (this month's subject) gave him a small class C engine, while the six was the top of the line for Class C in the 60 range.

As was to be expected, all parts of the four were interchangeable with the single, with exception of the crankcase, crankshaft, and gas tank. We lost track of the number of ball thrust bearings, but we do know there was one twelve-ball bearing in the twin! Interestingly enough, all Elf engines were

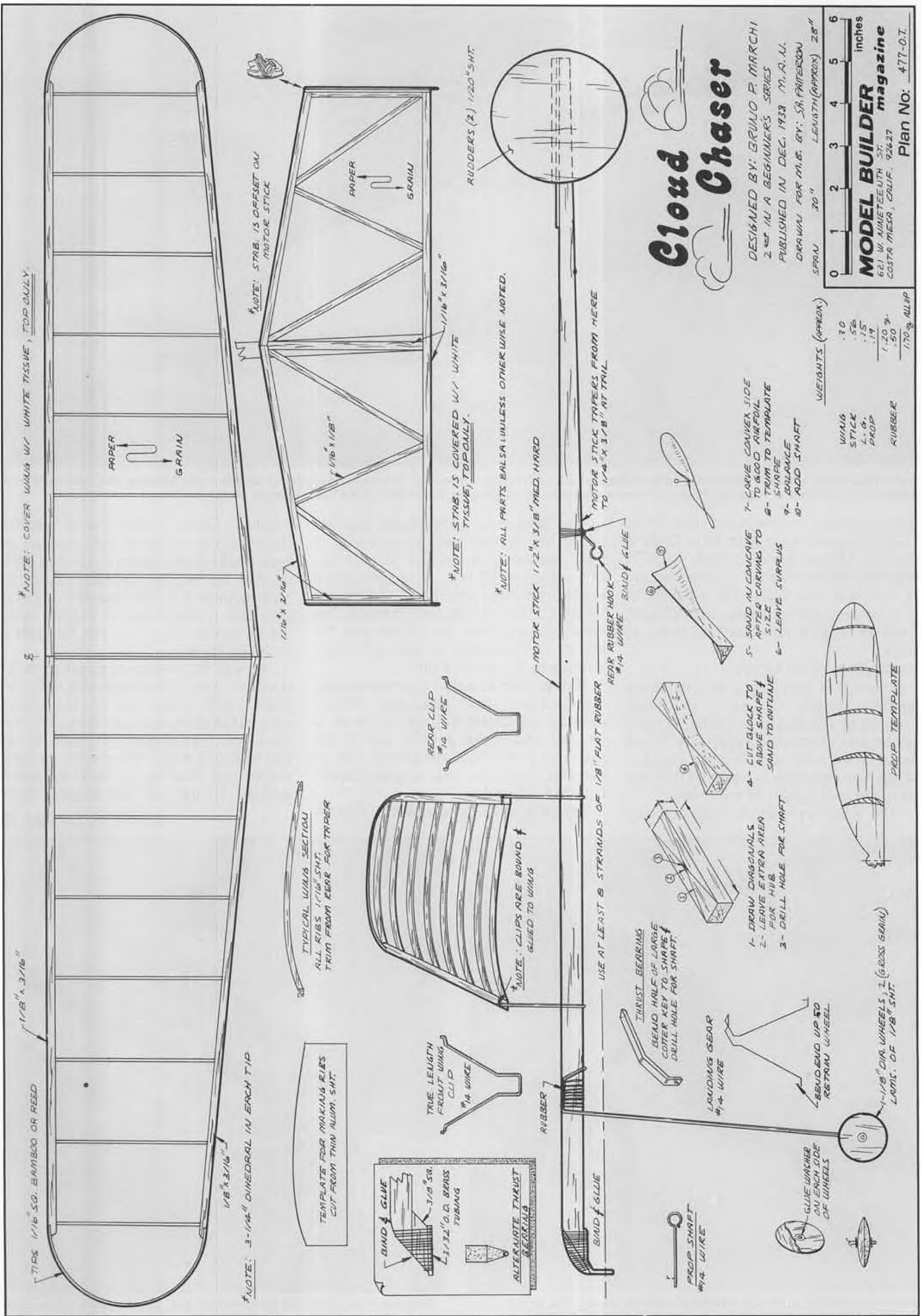
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Very neat cowling work and simulated exhaust stacks. The inevitable Brown Jr. engine is completely hidden by the cowl.



Another view of the engine compartment. The complete upper cowling swings up on a hinge at the back end.





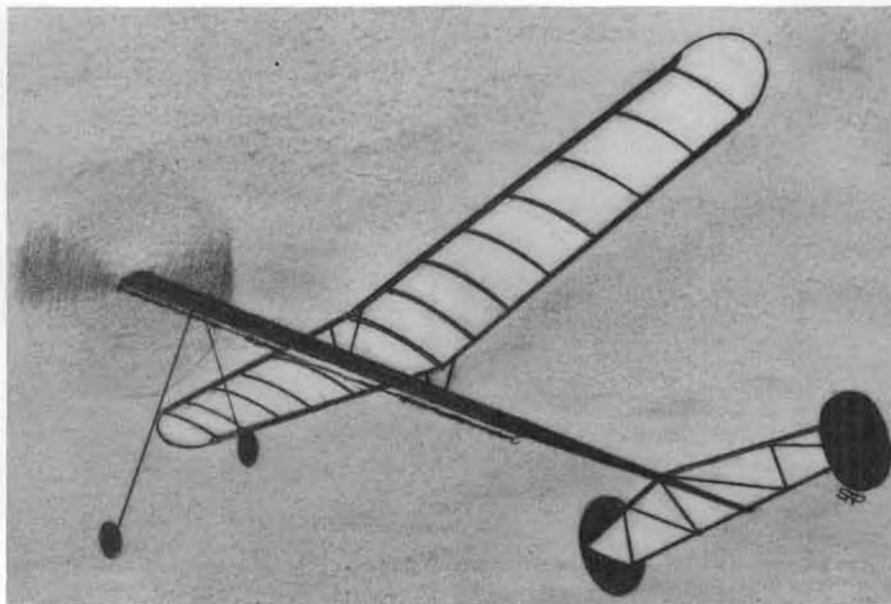
# "CLOUD CHASER"

OLD TIMER Model of the Month

Designed by: Bruno Marchi

Drawn by: Al Patterson

Text by: Bill Northrop



● As we already have an old timer for the feature, "up front" construction article this month, it gave us the opportunity to present a somewhat different Old Timer of the Month.

The "Cloud Chaser" was published in the December 1938 issue of Model Airplane News, and then as now, it makes an excellent trainer for the novice model builder and a heck of a performing fun plane for most anyone. As a matter of fact, its generous size would make it visible enough at distance to be competitive in Unlimited Rubber. Adding a DT would be very easy.

Because of its appeal to the novice who is really interested in learning the fine art of building and flying model airplanes, we are going to make a further departure from the usual O.T. of the Month feature by including building instructions (which, as usual, will be reprinted for inclusion with the full-size plans). And since Bruno Marchi did such an excellent job of instructing back in 1938, we'll simply lift most of his text as originally published, with appropriate additions or subtractions.

Select a medium-hard piece of  $3/8 \times 1/2 \times 28$  inch balsa for the motor stick. Measure in eleven inches from an end on one of the  $1/2$  inch sides and from that point, taper the stick to  $1/4$  inch at the rear so tail end of stick measures  $3/8 \times 1/4$  inches. With thinned glue, precoat front of stick where large thrust bearing will be glued on. Repeat procedure allowing cement to dry well between coats, filling the pores of the wood to provide a firm gluing base. Then using thicker glue, cement thrust bearing to stick. While bearing cement is drying, bend the rear hook and propeller shaft from No. 14-wire. For this work, a good pair of pliers are most necessary. The few extra pennies invested in pliers of good quality will repay with longer and less troubled service. Contest losses and crumpled fuselages caused by misshapen

fittings frequently can be traced to poorly-bent fittings made with inferior pliers.

With fittings made, glue rear hook to motor stick, first pre-coating as with the thrust bearing. Then apply another coating of cement, bind with thread and . . . you've guessed it . . . apply a final coating of cement.

After bearing is dry, bevel nose of motor stick as indicated by line M-N on plans. Precoat, then add extra nose piece shown, shaping with sandpaper and cementing liberally. Bind entire nose portion with thread and add several coatings of glue.

(Finding a good, strong, ready-made thrust bearing (or hanger) could be difficult in this day and age. The originals had a half-round cross section . . . like a large cotter key. In fact you can make one from a cotter key. Select one that is about  $3/32$  to  $1/8$  inch wide, bend to shape, and drill hole for shaft.

An alternate thrust bearing can be made of tubing, as shown on the drawing, but it has a disadvantage in that the prop shaft must be inserted before making the final bend at one or the other end.)

Stabilizer's leading and trailing edges and center piece are  $1/16 \times 3/16$  inch balsa strips. Tip pieces are same size but are set on edge to give greater gluing surface for the twin rudders. Diagonal stabilizer bracings are  $1/8 \times 1/16$  inch balsa strips.

Bevel the two pieces which form the stab's leading edge, then pin these and the trailing edge down on your drawing and cut bracing to fit, making joints as indicated on drawing. Precoat all joints with thinned cement, using normally thick glue for final assembly. When cement dries, stabilizer is turned over and covered with tissue. Grain of paper should run from leading to trailing edge, not lengthwise. Even though the cover-

ing is not to be shrunk, sun will tighten up tissue and surface might warp were grain of covering tissue to run parallel to trailing edge.

If this is your initial covering attempt, don't be discouraged if it seems difficult. Keep trying until a smooth covering is attained. This is best done by applying thin dope to leading and trailing edges and end ribs, then stretching slightly larger piece of tissue over stabilizer frame and pulling taut with finger tips. Remember . . . don't shrink tissue with water or try to dope the paper.

Twin rudders are cut from  $1/20$  inch (or sanded  $1/16$ ) thick sheet balsa. Edges of rudders are sanded round, then glued, one to each end of the stabilizer, after precoating cementing surfaces. Be certain rudders are parallel.

When complete, entire tail unit is glued on motor-stick with the covered side of the stabilizer on top. The stabilizer rests flat on stick at no degrees of incidence and is off-set slightly, as shown, to make model circle to the left. This is known as circling the model with torque.

Wing spars are  $1/8 \times 3/16$  inch strips. Pin them down on the full size panel drawing. Ribs are cut from  $1/16$  inch sheet balsa by using a metal or cardboard template. Using this template pattern, cut sixteen ribs each  $1/8$  inch deep. Leaving out the two center ribs, fit remaining ones into place between leading and trailing edges by cutting off rear portions until all are in place. Precoat cementing surfaces, then glue ribs in position. This method of tapering the wing by cutting a bit more off the rear of each rib while working outwards from the center eliminates stalling wing tips, thus adding to the efficiency of the main lifting surface.

Wing tips may be bent from  $1/16$  inch square bamboo or reed. (You can find bamboo skewers at your grocery store or

Continued on page 99



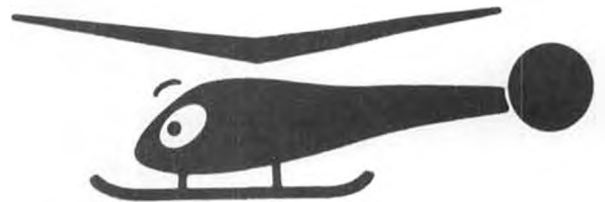
Even after knowing that it's a Shrike Commander fuselage, it's hard to make it look like one! Color scheme is white, with red and black trim. All running gear is Kavan Jet Ranger.



A door was added to make easy access to the fuel tank and glow plug harness.

# CHOPPER CHATTER

By JOHN TUCKER



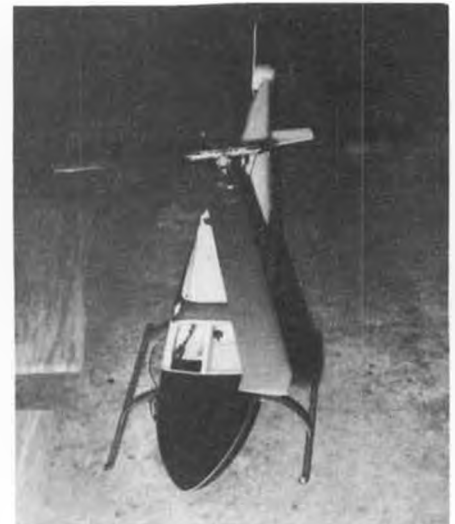
## PROJECT COMPLETE

I really didn't want to build the machine. I guess I just sort of got talked into it by my son Kim. It all started about a year ago when I tried to convince (without success) Franz Kavan that he should offer the helicopter enthusiasts an alternate fuselage for his now famous Jet Ranger mechanics. I reasoned that the average modeler would accept such an option since he will eventually tear up his original body, piece by piece, but the mechanics will probably never wear out. Factually, this average modeler just continues to repair and fly his "bird" until he takes a liking to a different one . . . the old one lasts and lasts with just a little T.L.C.

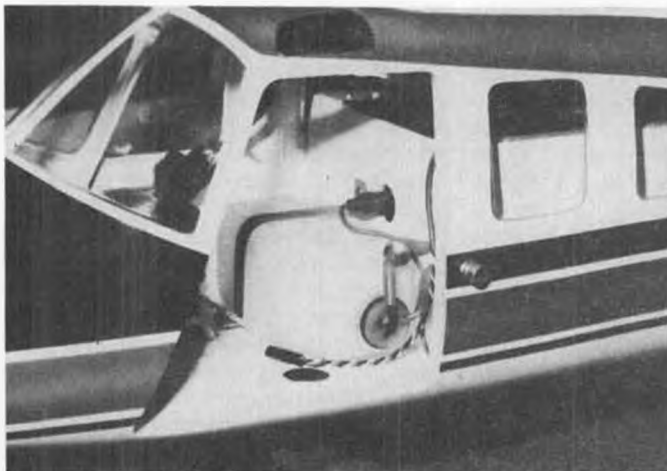
To get some ideas, I poured through the magazines, even comic books, for sketches and drawings, all to no avail. Then one day I noticed the advertisements in "Rotor & Wing International"

for the new 8-place Agusta 109A, which looks more like an airplane than a helicopter! It suddenly struck me that only last week, Kim and I had gone to the local hobby shop to look at the Bridi "Shrike-Commander" twin engine R/C kit, and commented on the excellent epoxy-glass fuselage (large enough to hold the Kavan engine box). From that moment on, Kim pestered me until I finally agreed to make a stab at adapting the airplane to a chopper. I personally think he wanted the project to flop, so he could build the kit as it was planned! Ha!

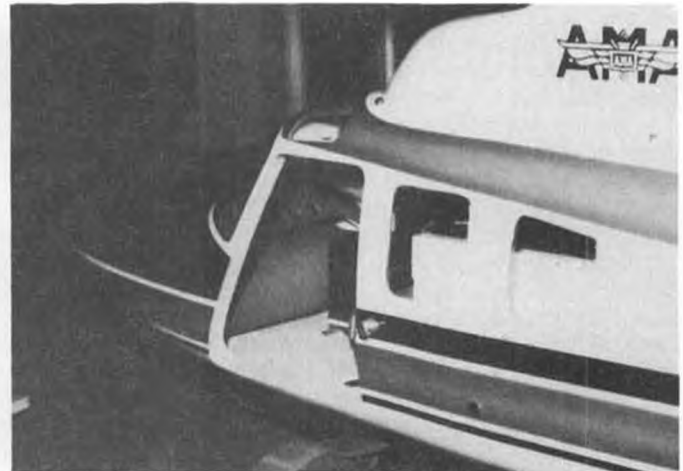
With lots of help from the guys at Model Builder, I was finally able to purchase the kit from Bridi Enterprises, with the proviso that they might not be able to supply just the fuselage to potential modelers with the same idea. So, if you plan on giving it a go, be prepared to buy the whole kit.



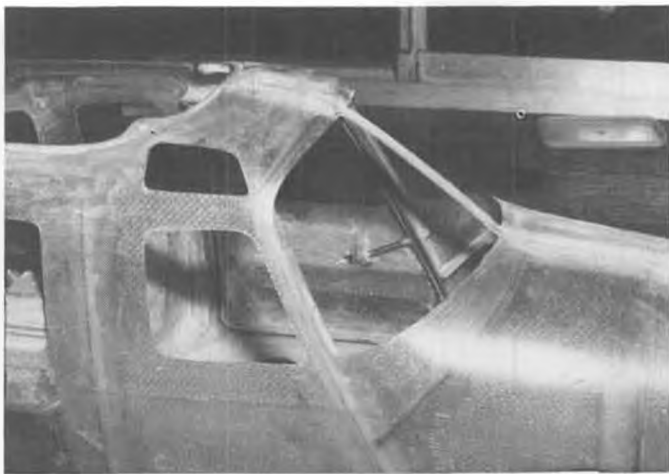
Experimental swept rotor tips, taken from full scale tests. Seemed to improve flying qualities. See text for comments.



With door removed, it's possible to get into the cabin up to your elbows! Engine and drive system is inside "freight" compartment.



Forward view of cabin, showing instrument panel, with radio receiver tucked in foam underneath. Kavan gyro in black box.



Close-up of fuselage shell, showing bulkhead details and mounting of door, using fixed and sprung pins.



Cabin door cutout, engine box installation, door framing. Access holes for glow plug and for landing gear shocks.



Inside of door is framed in ply for strength. Pins at rear, Sprung pin at front.



John molded his own landing gear struts to conform to the under surface of the Shrike fuselage. Location of all forward bulkheads can be seen in this photo.

(Just before going to press, we checked this with Lou Stanley, of Bridi Enterprises. In the six to eight months since the purchase of the original "Shrike/Helicopter" fuselage, new production methods and better sources of raw materials have permitted fuselage production to more than keep up with Shrike-Commander kit processing. As a result, scratch helicopter builders may now purchase the required Shrike parts, i.e., fuselage, wing cover, and windshield/window material. The fuselage, with wing cover \$39.95, F.O.B., Wilmington, California. The molded windshield and side windows are an additional \$4.50. Address orders to Bridi Hobby Enterprises, 1611 E. Sandison St., Wilmington,

CA 90744.

Also, John, along with our technical artist, Al Patterson, has worked out a drawing which shows the forward fuselage shell modifications, including full-size bulkheads, and Jet Ranger parts installation. Order Plan No. 477-H, \$2.00. wcn)

The most complicated aspect of the conversion was to design the cabin top, and to find the proper locations for the components so as to arrive at a good C.G. position. By borrowing the talents of my other son, John Jr. (a professional draftsman), we traced out dozens of configurations until we had one that

looked pleasing, and appeared simple in construction. After shelving some other projects, and clearing off the workbench, we went to work on the building phase. Step one was to epoxy in the saddle that covers the airplane wing, and fill in the voided areas so as to start with a "solid" fuselage.

Cementing in the saddle presented no problem, however, filling in the holes where the wings belonged did cause much thought. The solution was to fill in with balsa, sand to conform to the fuselage shape, then make a fiberglass mold of the whole top-side for later use. Using this mold, I first laid up the two



Top cabin fitted to fuselage. Main rotor shaft has been installed. Glassed over for strength.

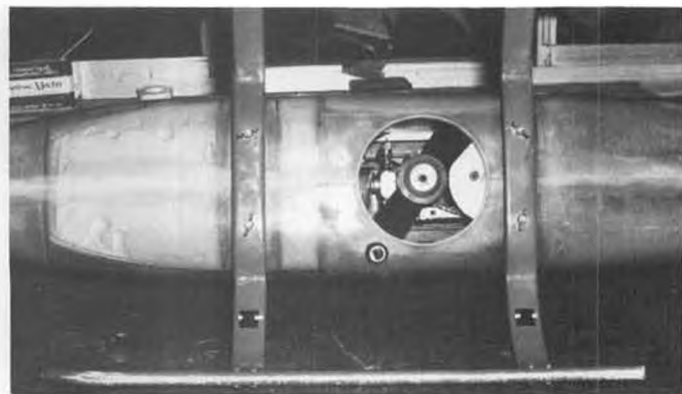


Cabin top details. Main rotor shaft and aluminum bracket installed. Balsa blocks have been hollowed out.





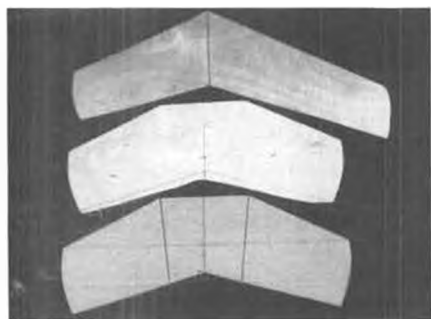
Underside view of cabin top shows main drive gear on shaft, fittings, and servo mount for mechanics.



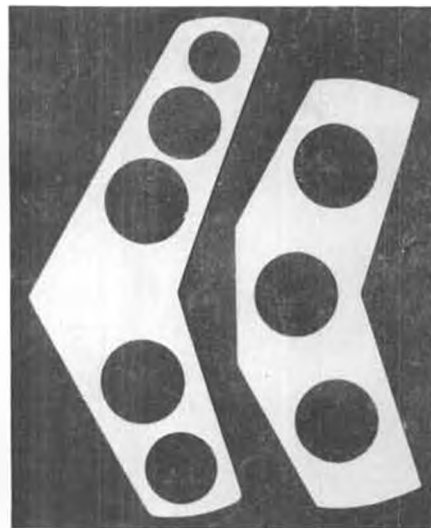
Underneath shot shows gear mounting, cooling fan hole, floorboard and formers. Black squares are telephone wire holders for antenna.



View toward aft end, shows tail rotor drive shaft and pushrod control supports.



Patterns for horizontal stab and vertical fin.



Ply cores for horizontal and vertical fins before covering with sheet balsa.

sides to fill the wing root area. These were then cut to size and epoxied in place. It worked fine, and still left the intact mold from which I could make other patterns for the top modification.

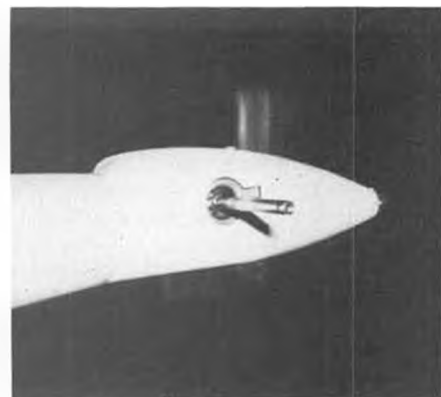
The next step was to cut out the large oblong opening in the top of the fuselage to provide access to the engine compartment and gear train assembly. By way of explanation, the cabin top is installed in exactly the same fashion as on the Jet Ranger, as well as the engine installation. Every effort was made to duplicate the ideas and component placement of the Jet Ranger so as to minimize the construction work-load. By trial and error, the top opening was enlarged until it readily accommodated the engine transmission unit.

Now, going back to the top mold, a reinforcement liner was laid-up, trimmed to shape and inserted inside the fuselage top opening, and epoxied in place. This liner adds considerable strength to the opening and also provides a ledge for the cabin top to rest upon. Since we had no further use for the original mold, it was then carefully trimmed to fit the top opening, and in fact, became the base part of the cabin top. After being secured to the fuselage with 6 machine screws and blind nuts, we cemented a piece of 1/8-inch plywood to the base plate and proceeded to mount the original cabin top mechanics as per the Jet Ranger instructions. When all components were in place,

*Continued on page 97*



Note 1/32 ply shroud around fan hole. Ducted fan principal for cooling. Exhaust stack in other hole. Heat sink on engine.



Tail cone from Jet Ranger grafted onto Shrike fuse with epoxy and micro-balloon fillets.



Basic fuselage prior to priming and painting, vertical fin installed. Shrike fuselage is available separately, along with wing saddle cover and molded windshield. See text for complete info.



Our cover Cover, Hal, that is, a few years prior to the beard, launches his Thermic 100, built from 1943 JASCO kit plans. The pod-and-boom fuselage and the graceful, bird-like wing outline, have long been a classic in modeling history. Need we say that Frank Zaic was the designer?

# R/C SOARING

by Dr. LARRY FOGEL.

PHOTOS BY AUTHOR

● It's often as much fun to look backward as forward in time. Recently, Frank Zaic heard from John Karasz, of West Hempstead, New York. It turns out that John, together with his father and brother, Al, were probably the first to fly radio controlled sailplanes on Long Island. Back in 1935 they were interested in both amateur radio and model aircraft. They studied DeSoto's experiments with radio controlled gliders, but found the equipment too complicated, large and expensive.

Not having a phone, they had just completed a five meter regenerative voice link between Mom's store and their home. It operated on what is now Channel 2 of the TV band, but at that time, the frequencies were readily available (as were flying fields all over Long Island). This same simple regenerative (modulated oscillator) type of transmitter/receiver was then pressed into service for controlling their aircraft.

They had some experience with early powered planes "but the technical problems of the ignition type engine creating havoc in the regenerative receiver were more than we could handle, technically." So they set out to design their own sailplane . . . the result was a functionally stable, boxy beauty with just enough room to handle the A batteries for filaments, the B batteries for the plate and the C bias battery. The

rudder cross-section was thick enough to house the vertical rubber-band motor used to drive the control surface through an escapement device. The loud speaker was replaced by the coil of a sensitive relay.

About that time, the two brothers became proprietors of the "Best Model Shop" in Elmont, with people calling them John and Al Best. Who'd believe the name "Best" would be used if it was the only model shop in town? Actually, the business was more of a hobby than money-making proposition.

According to John, "the hours were peculiar . . . open only in the evenings when Al and I got home from school, and open on Saturdays, only when the weather was too nasty for flying models." They built every kit in the store . . . all but the Thermic 100.

They came up with the big, red paper-covered glider and flew in many areas, which are now in the heart of populated districts. One day, Frank Zaic, was at the soaring site in Hicksville, Long Island, and witnessed the red plane in flight, then made a



The Karasz brothers, John and Al, built and flew this radio controlled, paper covered glider in Hicksville, Long Island, circa 1935. Read about their experiences in the text.



Forty-year loaner is finally returned! A prototype Thermic 100 was shipped back to Frank Zaic by UPS from New York. See text.



Tired of waiting for the ship at left, Frank designed and built a few more gliders during the 40 year wait. Here he is with the Metric.

very generous offer, lending the brothers a Thermic 100 so that they could continue their experiments in a state-of-the-art aircraft. This led to the longest model sailplane loan in history . . .

Progress in the development of R/C soaring was moving slowly. "We wanted to perfect the control system before transferring the receiver, escapement, and so forth, to the Thermic 100. Although the carved-out pod was large, it wasn't quite large enough, and so on to the design of new, smaller, relays and escapements." In those days you couldn't buy such gear. You had to design your own, then build it, even winding the solenoid, turn-by-turn. Acquiring the wire for such a component was a major chore. "I remember the expedition to 'Radio-Row' on Courtland Street in New York City to buy the finest gauge enamel wire we could get. This was necessary to create an 8,000 ohm, sufficiently sensitive relay. Luckily, after almost giving up the search, one store had a single rust-covered coil of number 38 AWG wire . . . just what we needed. The salesman questioned us to make sure that this was

really what we wanted. He told us the wire wasn't good for any practical use, because it was as fine as human hair. The price was right . . . he practically gave the wire to us. He didn't remember how long it had been in the store. I'm sure he was convinced that in another 100 years, no one else would want wire as thin as that."

Winding the coil was very difficult. Perhaps you can imagine the very delicate and tedious operation that was "almost like rewinding a silkworm's thread back into the cocoon." The wire was practically invisible, and breakage was common without a constant tension-producing winder. Every break had to be soldered and insulated before further winding.

John goes on to describe the difficulties of generating the high voltage in small space and at low cost. He reminds us that we take for granted the relative ease of our generating radio frequency signals in portable equipment.

About that time, World War II side-tracked the brothers. They entered the Army and Dad closed up the model shop and stored *everything* in his attic. In the

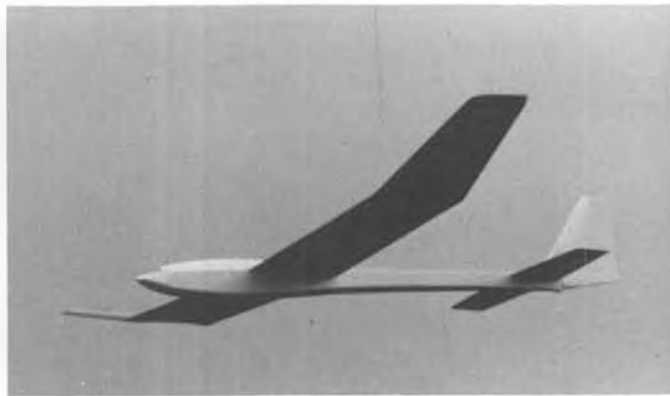
post-war years there was more schooling, marriage, career concerns, and bringing up another generation of model builders. Recently, the "new" generation started getting into modeling and this prompted reminiscences of the good old times and that almost forgotten dusty storage area in the attic. Fortunately, it had never been cleaned out, and in fact, a telephone call to Frank Zaic announced that he was about to receive the same Thermic 100 he had loaned to his acquaintances of 40 years ago!

They encountered some difficulty in shipping the model. As you know, the wing is one piece with wide chord. After much debate, United Parcel found a way of accepting the model since it could legitimately be called an "antique" . . . an "allowable exceptional item".

I also hold fond memories of a Thermic 100. I keep the wing-tip as a treasured memento of a well-learned lesson early in my R/C soaring career. My ship was silk-covered and flew high over the Pacific, off Torrey Pines. Then came a hard landing. I picked up the plane and everything seemed O.K. and so I threw it off once again . . . only to



No, Ace has NOT finally done it, nor is it King Kong's ruler. It's a freebie to every participant in the NSS '77 Excellence Award Prog.



Torrey Pines Gulls member Ken Banks designed this 2-meter ship, calls it the "Octillo 2000."



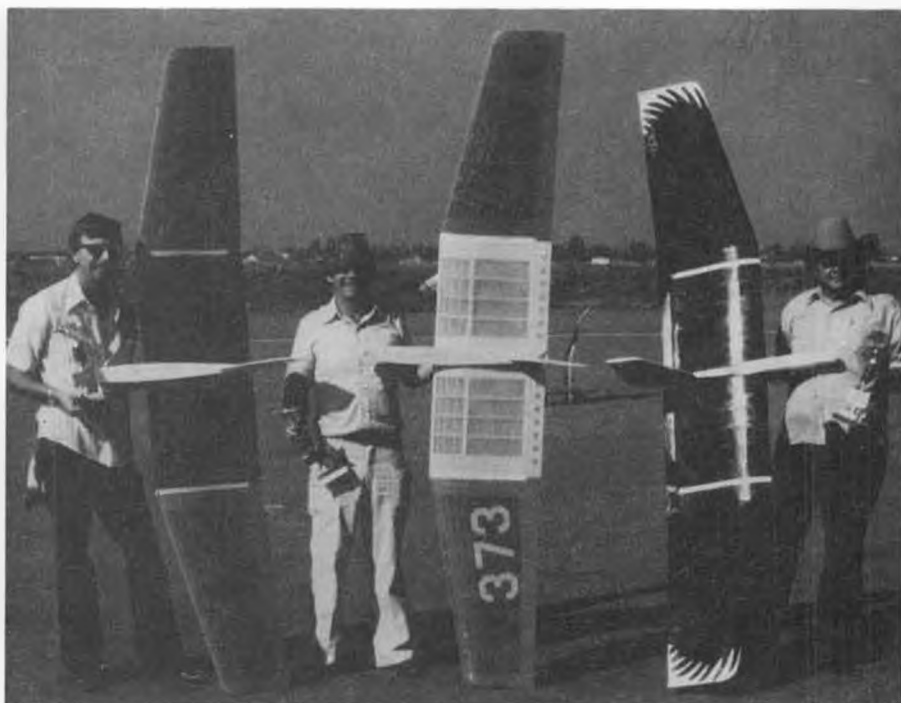
learn that the main spar in one wing must have been cracked. The first tight maneuver resulted in the wing folding and the resulting crash left little of the original beauty. Taking a lesson from this, I now test the strength of the wings after every hard landing.

In recent years Frank Zaic has come up with newer designs which also reflect his artistry. Features of the Thermic Series can be seen in his Floater, his smaller Metric, and in the still smaller Scout. This last plane was designed to be conveniently carried with you as you fly commercial airlines. When you visit friends, you no longer have an excuse. I've flown the Scout in everything from dead air to 20 knots. I want to take this occasion to congratulate Frank for his many fine designs and other large contributions to R/C soaring.

Now a glimpse of the future: there seems to be considerable interest in 2-meter span sailplanes. For example, the prototype of Lee Renaud's Buteao is being flown by Don Edberg. Al Doig couldn't resist making a copy. This plane performs remarkably well for its size. The airfoil is the same as the Olympic II and it has plug-in wing tips. The wide chord yields a 700 square inch wing area. Total up weight is about 30 ounces. No single piece of this kit will be longer than 3 feet. I look forward to trying my hand at making this bird perform.

Ken Banks, another member of the Torrey Pines Gulls, has also come up with a new 2-meter design, this one called the Octillo 2000. The wing has exactly the same airfoil as the Hobie Hawk, but with polyhedral. At a total weight of 24.5 ounces, the wing loading is 6.5 ounces per square foot. This craft penetrates remarkably well for its weight. It's clean and benefits from a full-flying rudder.

There's also renewed interest in flying wings. May I call your attention to the Raven, designed by Dave Jones. This



Northrop Flying Wing R/C Glider winners (l to r): Cecil Cutbirth 2nd, Pat Seale 1st, and Roy Stowers 3rd. All models are the Raven, designed by Dave Jones. See text for plans source.

unusual bird is practically all lift. I could take you through the statistics of its recent contest winnings, but there's no way to appreciate this bird without seeing it for yourself. Dave offers the plans for sale via his Western Plan Service (5621 Michelle Drive, Torrance, CA 90503). The Raven is a Standard class flying wing suitable for your competition. The span is 99.1 inches projected. The area is 1501.2 square inches projected. The three-piece wing comes in separate sections making it suitable for transport and storage. Storage? Who'd want to store something that can be as much fun as this? It can be configured for 2 or 3 controls, and get this . . . the surface loading can be as low as 4 ounces per square foot. Dave has come up with many other interesting designs. Why not buy a copy of his catalog?

I've just learned that the Granada

Hills High School (in the Los Angeles area), has formed a glider club. Mr. L.B. Cotter, the sponsor of this activity, tells how these young folks are going through stages of learning about aerodynamics, building and flying hand-launched gliders, proceeding to tow-line sailplanes, then on to radio controlled soaring. Their joint investment provides them with a training R/C sailplane so that all members of the club can become pilots. This activity deserves every bit of encouragement. Here's an opportunity to take a real birds-eye view of nature. Perhaps other schools could start similar extracurricular activities.

Now on the social side: every member of the National Soaring Society participating in the 1977 Excellence Award Program will receive a free miniature

*Continued on page 93*



Don Edberg launches his prototype "Buteao", designed by Lee Renaud.



Another "Buteao", this one by TPG member, Al Doig. Ship meets the 1978 AMA 2-meter specifications, has the same airfoil as the Olympic II, plug-in wing tips, and 700 sq. in. wing area.



PHOTOS BY JANN BUCHANAN

## PRODUCTS IN USE

Model Flight Accessories "Spearfish", Astro Flight 25 Marine Electric Motor, Electro-Craft Speed Systems Controller, by CHARLIE VIOSCA.

• Model Flight Accessories' "Spearfish," distributed by Polk's Hobby Department Stores, is a very neat boat manufactured in England. This thirty six inch model is a scale boat of the Fairey Spearfish high performance power cruiser. The model is designed to be powered by either a .40 or .60 engine for racing competition, or an electric motor for scale events. I chose to power this model with the Astro Flight 25 Marine electric motor. The Dallas R/C Boat Club has quite a few members who build electric powered boats, and I plan to enter this boat in our electric scale competition.

In some parts of the country, there are speed events for electric boats. Yes, they are really fast! If there is a drawback, it would have to be duration. I.M.P.B.A. classes electric powered boats

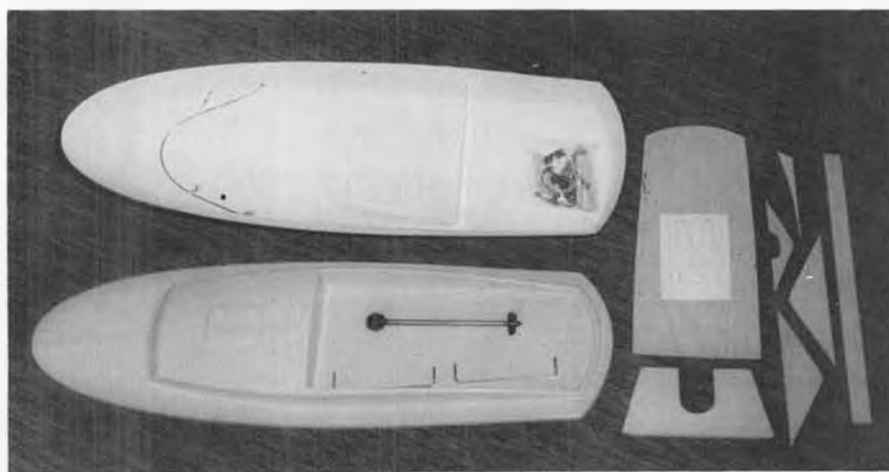
by the weight of the boat in running condition (including all power sources).

The Spearfish is truly a fine kit. The white gel coat fiberglass hull and the blue gel coat fiberglass deck are flawless. All accessories and wood are there . . . all you have to furnish are adhesives, radio, power source, and a small amount of paint. The instructions are very precise. Build the boat exactly like they tell you, from step one right through to the end, and you will find it very easy to do, with not much time required to obtain a finished product.

Even though all accessories are furnished, I made one small deviation; this was to replace the English U-joint and prop with Dumas units and also to replace the shaft log and nylon bearings with Marine Specialties units. The units

furnished with the kit are excellent; however, I felt it would be easier to get replacements should the need arise. The furnished U-joint is completely different from those of U.S. manufacture, with the bearings having a different outside diameter. There were no other changes made. I will not go into the actual construction, since the kit instructions are excellent and include many photos . . . even a beginner should not have any trouble following them. Two different types of radio installations are illustrated (my preference is the sealed radio box).

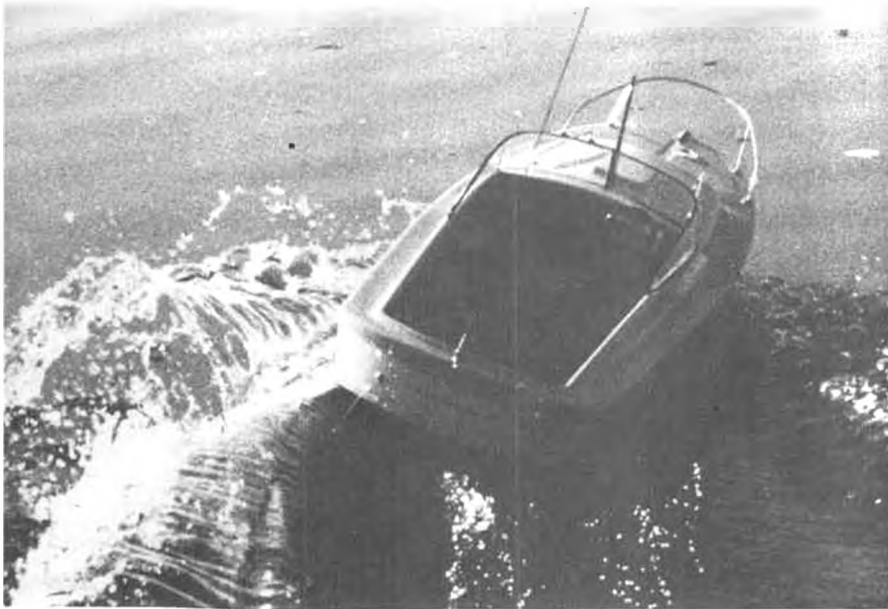
I like their suggestion of attaching the deck to the hull with silicone adhesive such as Dow Corning's "Silastic". This way you can cut the deck loose from the hull if the need arises, whereas with epoxy or fiberglass resin, it would be more difficult, if not impossible. For those of you who are not



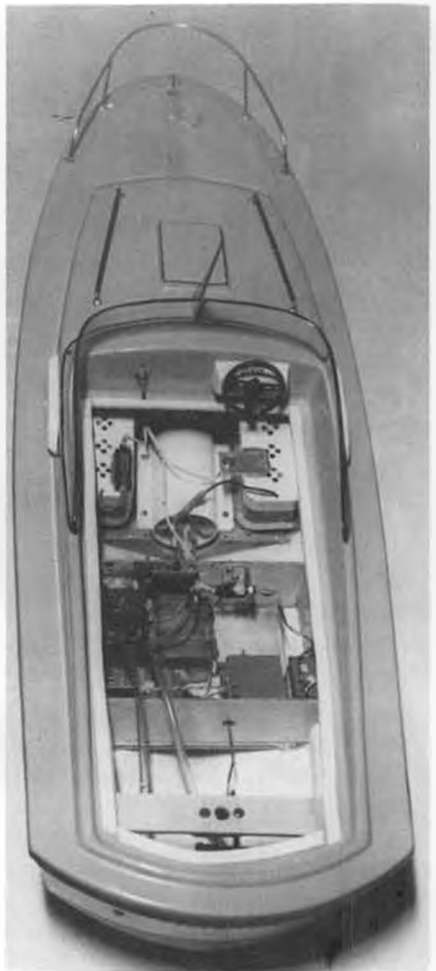
The Spearfish kit. Fiberglass hull, with bow rail, windshield, and hardware, at upper left. Deck, drive shaft with U-joint and handrails, bottom left. All other wood parts at far right.



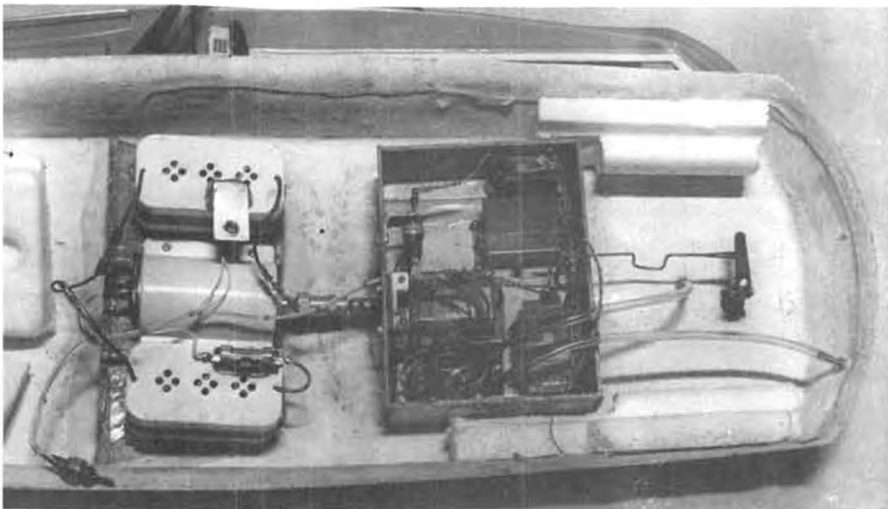
Completed boat with scrap foam flotation glued in fore and aft sections of hull. Deck attached with silicone for possible removal.



Just in case you thought electric power was just for putt-putting around, take a look at this! Water discharge is from cooling coil around speed control heat-sink.



Another view of power and control installation shown at left. Servo at far right operates reversing switch. EK radio system used.



Close-up of installation, showing Astro 25 Marine motor, flanked by batteries. Left pack carries 20 amp fuse, right pack has charging plug. Complete radio system in box at right.

familiar with fiberglass work, let me caution you of the fact that *epoxy will adhere* to fiberglass resin but *fiberglass resin will not harden* if used over epoxy. A chemical reaction prevents the resin from hardening, so if you plan to use resin over wood for waterproofing, do not use epoxy to glue the wood together. Tack parts together with adhesives such as "Hot Stuff" or "Zap" and then use the resin for waterproofing.

Polk's Hobby Department Store is located at 314 5th Avenue, New York, NY 10001. This is a complete hobby store, and they should not have any trouble filling any hobby order you may have.

Astro Flight, Inc., "pioneers in electric flight," manufactures electric motors of many different sizes for your car and boating pleasure. This is in addition to its electric powered aircraft. Electric power has its advantages, some being: no mess, instant starting, and no noise. Perhaps you will want to run your boat in a neighborhood pond or lake (without swimmers in the water, I hope). If so, electric power would be the only way to go. Model engines would be too noisy.

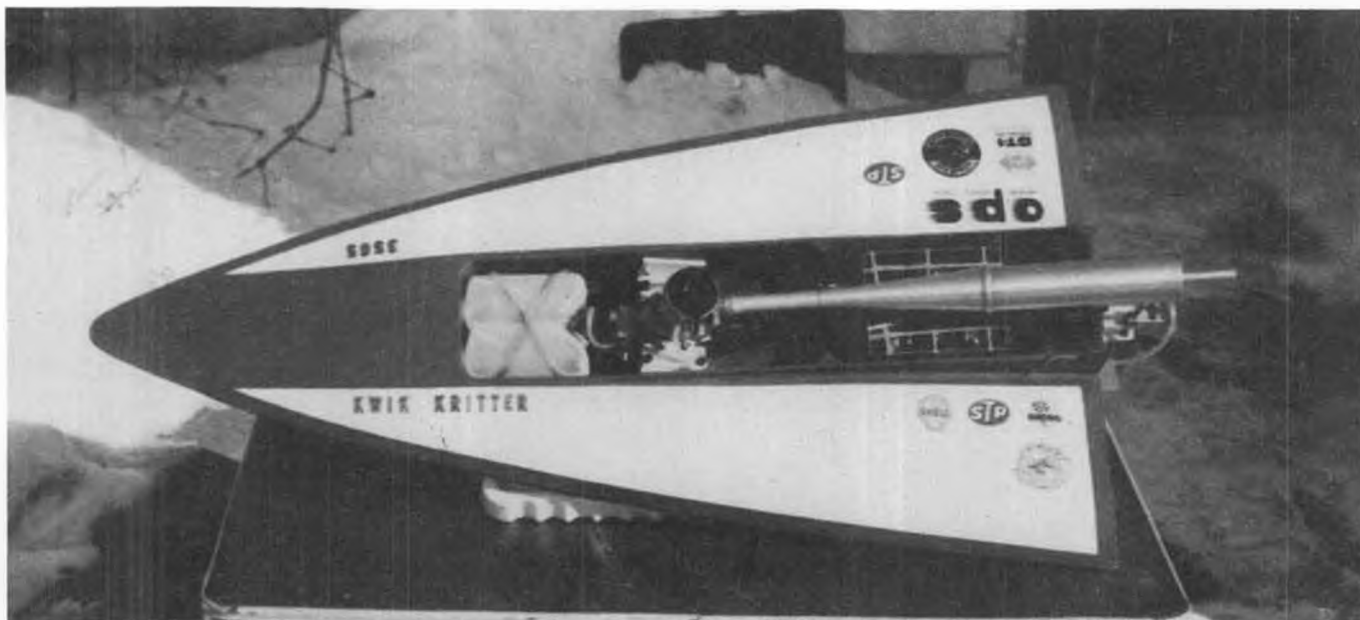
Besides the electric motors, Astro Flight Markets many accessories in its

*Continued on page 77*



Charlie Viosca, a corporation biz-jet pilot when not building models, with the Model Flight Accessories "Spearfish". Note battery cooling air scoops for Astro Flight electric motor.





The author's OPS .40 powered "Northwind", which he built from a Steve Muck's R/C Model Boat Supplies kit. This month's article describes the kit, the engine, and the construction, in detail.

# R/C POWER BOATS

By BOB PREUSSE



• How about building a new mono for the coming season? If you want a proven winner with records to boot, a different design, plus a boat that assembles quickly, then try a "NORTHWIND" by Steve Muck's R/C Model Boat Supplies, 3422 Greenwood Avenue, Los Angeles, California 90066, telephone (213) 391-8794.

To power this dynamic mono, we suggest a piped OPS .40 from Shamrock Competition Imports, P.O. Box 26247, New Orleans, Louisiana 70126, telephone (504) 242-5967, attention: Bob Murphy. The OPS name is very popular at all boating events. It is a rugged engine with more brute power than most boaters dreamed possible a few years ago.

The Northwind was designed by

Ed Fisher and his father back in 1971. The delta design was successful from the start at setting records. It's popularity on the West Coast is very strong. Ed's boat was the first .40 powered mono in NAMBA to break the 40 mph barrier. The same hull is also suitable for a .60 engine. Ed proved that in 1973 when he set the NAMBA 60 class straightaway record of 55 mph with, what else, an OPS .60.

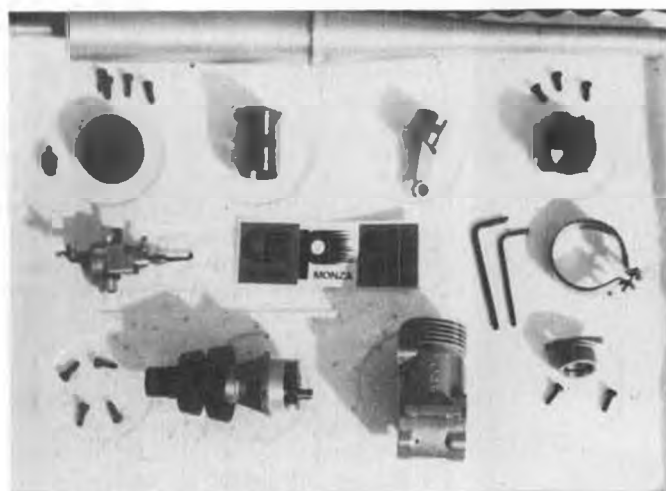
Since then, a smaller version, the "Li'l Northwind", has been introduced on the market. This is an excellent boat for a .20 engine. With the growing popularity of B mono in the Midwest area of the IMPBA, the "Li'l Northwind" should make it's mark in the winner's circle.

CONSTRUCTION

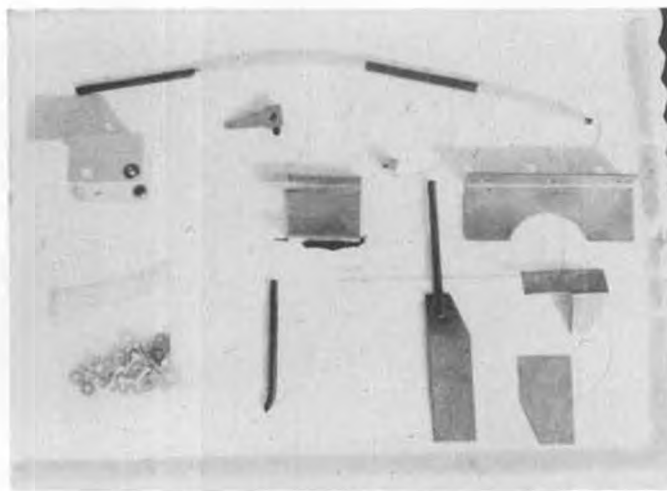
The Northwind is a unique kit that features a fiberglass hull with a plywood center section and deck. So, whether you like plywood or fiberglass, this boat is for you.

The hull has the cockpit and radio compartment walls glassed into place. All wood parts, bulkheads, decking, etc., are included in the kit, as well as a detailed set of plans. Building instructions are given step-by-step, and even include running information.

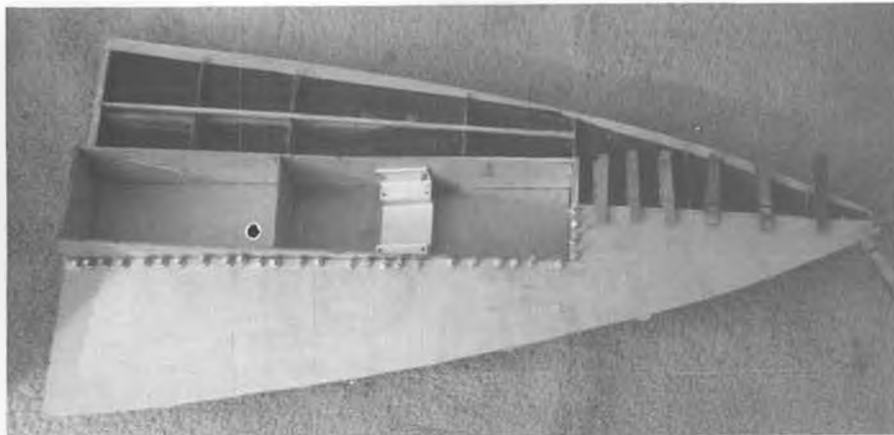
The instructions are complete with photos that show the various phases of construction. A complete hardware kit is offered by Steve Muck; everything you need right down to the ride plate and turn fin. The builder has a choice of cable drive or conventional drive with a parallel strut. I chose the conventional



The OPS .40 broken down reveals excellent machine work. Shamrock Competition Imports is the source of this engine.



These are the items included in the hardware package which comes with the Steve Muck kit.



The fiberglass hull comes with cockpit and radio compartment bulkheads glassed into place. Half of the deck has been epoxied in place. Pins and clamps hold it until epoxy cures.

drive because I also plan to run an OPS .60 in the boat, and I feel that this might be too hard on the cable set-up. The cable drive does have the advantage of causing less turbulence in front of the prop, because there is no underwater universal. The choice is up to you. The boat runs well either way.

Petit's Hobbypoxy was used to glue all wood-to-wood joints. Be sure to use a polyester resin for all parts which attach to the fiberglass hull, as the hobbypoxy will not adhere properly. This is pointed out in the instruction sheets, and is important, because beginners may not be aware when to use an epoxy glue or a resin.

The bulkheads and stringers are resined in place very easily. Note the 1/4-inch spruce stiffeners on the inside of the hull running parallel to the lap strakes. The front bulkhead seals off a small area in the nose for ballast, such as BB shot. A great idea for those windy runs. The plans have templates for a few parts that are cut out of scrap 1/16 plywood.

Before the deck is attached, it's time to install the engine mount. I recommend Steve Muck's Instant Mount with removable pads. The pads come pre-drilled and tapped for various engines. It is a precision-machined

mount that is sturdily built. The engine compartment walls are pre-drilled for the Instant Mount. Instead of T-nuts, I used two Marine Specialties engine mount back plates (available separately) to install the mount.

Using a Mini-Sander from Applied Design Corporation, 5531 Shoreview Drive, Palos Verdes Peninsula, California 90274, sand the tops of the bulkheads and stringers, but be careful not to take away the contour. The deck halves are cut from a 1/16 sheet of plywood, using the template provided. I applied a thin layer of epoxy glue and fiberglass cloth to the underside surface of each deck half. Then, using push pins, clothespins, and masking tape (as in the photo), the deck was attached.

Once the deck was dry, I sanded the entire lip of the boat to the desired shape. I applied a thick mixture of resin and micro-balloons around the lip. This filled any small spaces between the deck and hull. It also gave the plywood some extra strength on the edges. After sanding, the lip was smooth and sharp.

#### HARDWARE

The instruction sheets have a step-by-step installation of the running hardware. Note that the drive train, whether you use cable or conventional, is offset to the left of center by a 1/4 inch. This



Bottom view of Northwind. Drive shaft off-set for torque. Flat-head bolts resined over for smooth running surface.

is to counteract the engine torque (alias prop walk).

Both the strut and the turn fin are attached with flathead bolts sunk into the bottom. These areas were filled with micro-balloons and resin. The entire wetted area was block sanded. The result was a smooth and true hull. Steve Muck's NORTHWIND gives you all the ingredients of a winner . . . just take a little care in the assembly. Remember, as I have said before, a true, warp-free running surface is a big key to a successful boat. If you go the cable route, be sure to remove the cable from time-to-time and lubricate it generously.

OPS .40

The powerplant for my NORTH-

*Continued on page 76*



Transom shot showing the rudder and rudder plate installation. Also, note author's bracket for the tuned pipe.



The author's son, Jimmy, figured the Northwind would make a nice bathtub partner, but Pop has other ideas.



Winners at the Toledo Weak Signals Formula I Races, last September (l to r): Robbie Hager 4th, Roger Dietrich 3rd, Bill Hager 1st, Wayne Yeager 2nd, and Dave Keats 5th.

# PYLON

**“GO FAST AND Turn Left!”**

By JIM GAGER

NMPRA . . .  
YOU WILL JOIN!

Now! Rather a strong opening statement, but that expresses my feelings very nicely. Why should you join . . . what do you get for your ten bucks?

Foremost is a stronger voice in the process of guiding just where we're going in this racing game. If you have been reading what's happening with the rules proposals for 1978-79, you will have noticed that the governing associations such as National Soaring Society

(gliders) and the NMPRA-QM Division were very successful in having their rule proposals passed. Inside one of these associations, your voice is equal to all of the other members, and in unison our voices are very loud and looked upon as being knowledgeable, and therefore carry much weight with the AMA governing body and the Contest Board responsible for deciding which rule proposals are valid. Outside an association like NMPRA, yours is just another voice in the wilderness. You'll probably be listened to, but



Ohio Pylon Race Association Championships, Sept. 26 and 27, Dayton, Ohio. Winners (l to r): Bob Buzash 3rd, John Fotui 2nd, and Bill Hager 1st. Photo by John Kilsdonk.

perhaps not as closely as you would beaming a member of the associations. Also, for that ten bucks you'll receive a monthly newsletter. Based on my experience with it, you'll be receiving up to date contest information and, on occasion, very knowledgeable and timely racing hints. I know that I look forward to receiving the newsletter.

## WE GET PHONE CALLS AND LETTERS

First of all, let me say that I appreciate it when I receive correspondence and phone calls, as it helps me keep up with what's being planned for next year and also provides food for this column. I'm also more than glad to help someone when he's stuck with a problem. I would like to point out, however, that when it's 11 p.m. out on the West coast, it's already 2 a.m. here in Indiana, and would you please check the time before you call.

One of the calls had to do with a builder who was using polyester resin for the first time, and all of a sudden he had a serious problem and didn't know what to do or where to turn. His problem was that after applying fiberglass cloth to a wing with the resin, it just wouldn't dry all over. He was left with large patches that wouldn't harden, but remained sticky. After ascertaining (\$2 word) he was using the correct type resin (surfacing resin . . . this type contains a wax that rises to the surface and keeps air away from the resin. The absence of air allows the chemical reaction to occur, which cures the resin), we decided that he had tried to work the resin after the curing process had started. That's a no-no (2¢ word); working after curing begins can cause the wax to be trapped in the resin and prevent the curing from being completed.

Well there he was and no solution. There are several things that can be tried if you find yourself in the same predicament. You can try heating it

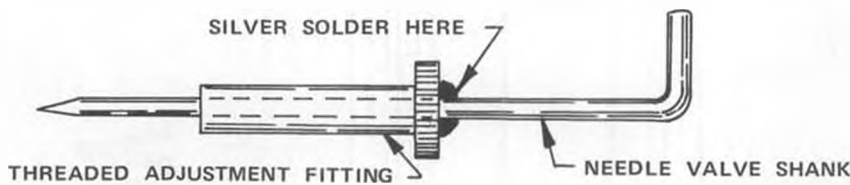




High Point Trophies were awarded at the OPRA Championships to Bill Weesher, Q-M Champ (left), and Bill Hager, Formula I Champ.



Bob Onori, who frequently contributes hints to this column, runs up his K&B .40 while Bill Preis holds on.



with a heat gun . . . sometimes raising the temperature will force the curing to complete. The problem with using this method is that while trying to get it hot enough to cure, there is a possibility of melting styrofoam, if you happen to have this problem on a wing that is using a foam core.

Another possible solution is to cover the uncured area with waxed paper or Saran Wrap. Saran Wrap is probably your best bet, particularly if you can wrap it completely around the affected area and tape the ends together. At this point it can be heat-shrunk using a heat gun. The tightness of the wrap will prevent air from getting to the resin and the slight heat applied will speed up the curing.

After trying the above methods, you may still be left with small areas that haven't cured completely. The only thing to do is to sand the area with coarse sandpaper (80 to 100 grit). The paper will clog rapidly . . . merely discard and continue. It isn't necessary to remove all the resin, just try to scuff all the area. Now you can put another coat of resin over the whole area. This coat should be mixed fairly hot, i.e., more catalyst, up to 3% of total volume resin used. Lots of luck! This coat of resin should completely cure without any problems.

Also received a phone call from a flier who had used "Imron" to paint his Formula I, and ran into a problem when he spilled some raw fuel on it. The fuel had a nitro content of 70%. The

nitro discolored his paint wherever it touched. Talking further with him led to the discovery that he had only used the pigmented and activator parts, and did not use the accelerator. While we had been under the impression that all the accelerator did was to decrease the drying time allowing more rapid finishing, it appears that this is not the case, but that the use of accelerator also increases the fuel resistance ability of Imron. We base this feeling on the fact that I, and many other fliers, use a fuel mix consisting of 75% nitro, 18% oil, and depending on weather conditions, up to 7% propylene oxide, and have yet to have any problems with raw fuel ruining an Imron finish. All we can suggest is to run your own tests and go from there.

While whatever appears in this column will have been either personally tested or a part of our personal handicraft techniques, we cannot be sure everyone using these methods will do so correctly. We will point out any drawbacks we know of, and should you run into any problems, we would appreciate knowing of them so we can pass them along.

**HELPFUL HINT**

The following problem caused us to lose several races last year, one of which was a "freebie" at the Nats. The one at the Nats was a heat in which we were the only flier, and we only had to make ten uncontested laps to pick up an easy four points. After the first lap, the engine stopped . . . as if it had run out of fuel or the fuel line popped off. Back at the pits, we discovered the tapered



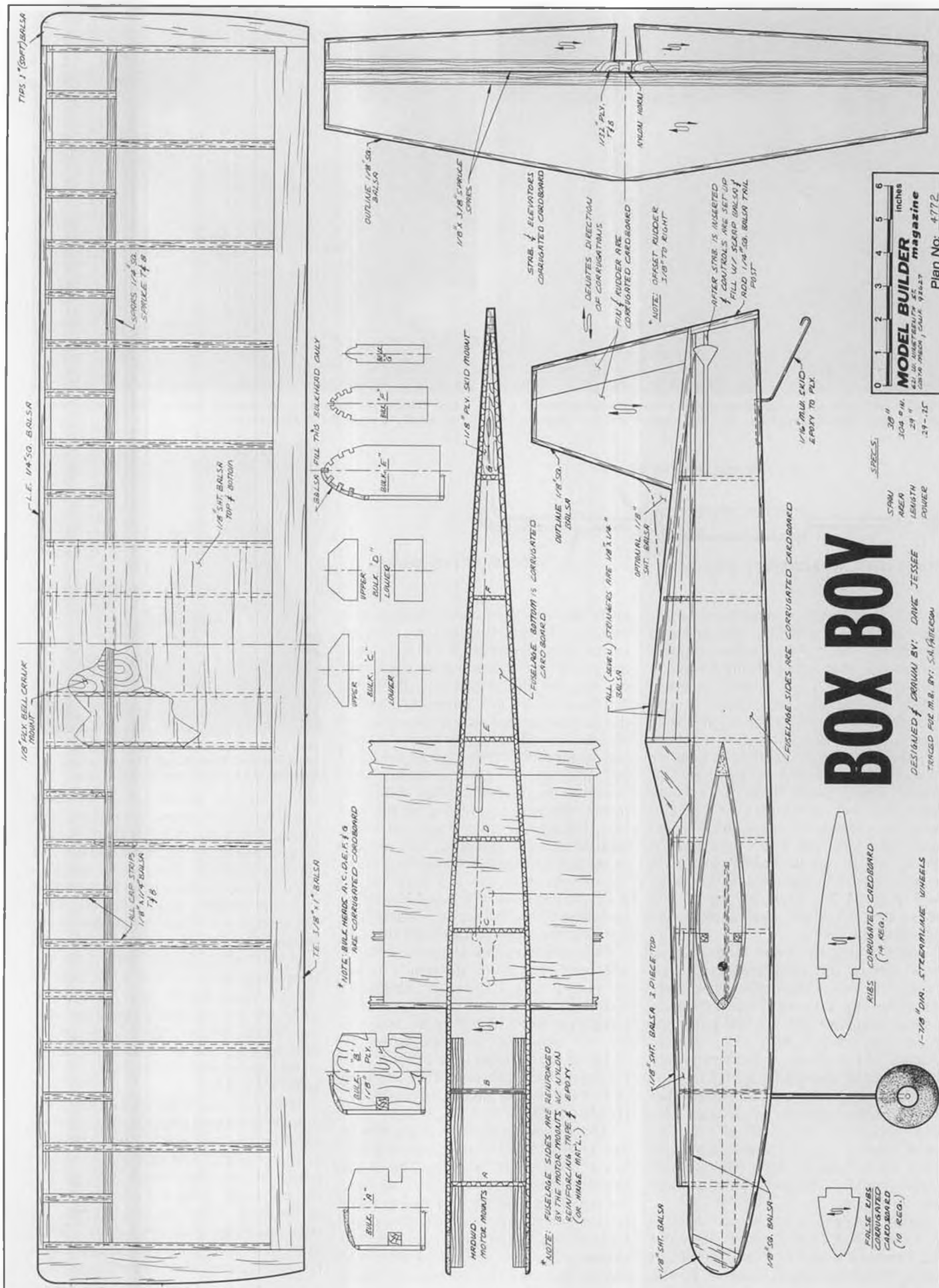
Dan Santich and his own design "Bonzo". Ship flies well even though Dan accidentally inverted the airfoil during construction!

shank on the needle valve had come loose from the threaded brass adjustment fitting. Turns out that this shank is only pressed into the fitting and it had worked completely loose, allowing the shank to work out and letting a large surge of fuel into the engine, killing it. We then switched to one of K&B's new aluminum needle valves and this cured the problem . . . for awhile. Several races later the same thing occurred. Now we're back to the ole brass needle valve, but we've taken to silver soldering the shank into the fitting. So far, this seems to be working o.k., and we'll continue doing it and recommend you do also.

**SAFETY FIRST**

While at our local polyester resin supplier to pick up some catalyst (methyl ethyl ketone peroxide), I was standing at the counter, holding the two ounce bottle in my hand while waiting for the bill to be made out. Out from one of the back offices came a member of our local flying club, Mike Peters. Mike came over and we started shooting the b.s. about planes and finishes, etc. While

*Continued on page 93*



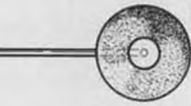
Plan No: 4772

MODEL BUILDER magazine  
 421 W. HARTFORD ST.  
 CHICAGO, ILL. 60647

38" WING AREA  
 104" WING LENGTH  
 29" WING POWER

DESIGNED & DRAWN BY: DAVID JESSEE  
 TRIMMED FOR M.B. BY: SAHARICOM

# BOX BOY



1-7/8" DIA. STEERLINE WHEELS

1/8" DIA. STEERLINE WHEELS

1/8" DIA. STEERLINE WHEELS

1/8" DIA. STEERLINE WHEELS



# "BOX BOY"

By DAVE JESSEE . . . Don't throw away that good corrugated cardboard box, it could supply most of the material for building your next model! Take a look at this one, and let your imagination do the rest.

## MATERIALS

Fuselage sides: corrugated cardboard  
 Bulkheads: corrugated cardboard  
 Wing ribs: corrugated cardboard  
 Tail surfaces: corrugated cardboard  
 Wing spars: 2-1/4 x 1/4 x 36 spruce  
 Wing L.E.: 1-1/4 x 1/4 x 36 balsa  
 Wing T.E.: 1-3/8 x 1 x 36 balsa  
 Gear mount bulkhead: 1/8 plywood  
 Bellcrank mount: 1/8 plywood  
 Elevator & stab spars: 1/8 x 3/8 spruce

Elevator & stab spars: 1/8 x 3/8 spruce  
 Wing center section: 1/8 sheet balsa  
 Cap strips: 1/8 x 1/4 balsa  
 Fuselage top stringers: 1/8 x 1/4 balsa  
 Tail surface edging: 1/8 sq. balsa  
 Motor mounts: 3/8 x 1/2 hardwood  
 Engine: Enya .29

Of course, the purpose of listing the materials first is to point out the fact that the major portion of this sport/stunt model is fabricated from ordinary corrugated cardboard. Only the 28 inch fuselage side pieces may cause a problem, as a fairly large, clean, uncreased chunk of cardboard is needed. (Hmmm . . . Is this the answer to the big, balsa-consuming ribs for our Mammoth Classic Scale ships?). If all else fails, your local paper supply house can probably sell you a 2x4 sheet for a buck or two. Don't

even *think* about comparing the price in balsa!

Corrugated cardboard is easy to cut with an Uber or jigsaw, makes strong glue joints, accepts just about any type of dope or epoxy paint, and if properly used, will not make your model any heavier than if build entirely of wood.

## GENERAL CONSTRUCTION

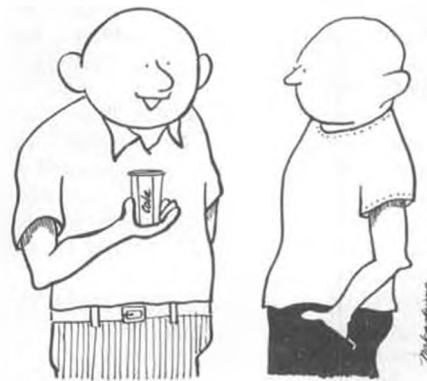
Building with cardboard is not that much different than building from wood. Be careful not to bend any parts to the point of creasing, as this destroys all of the strength.

Exposed edges, as for example the sheet tail surfaces, are covered with balsa and/or hardwood and sanded to shape. Reinforce the fuselage sides at the motor mounts with hinge cloth glued in place. Cap strips cover the exposed edges of the ribs.

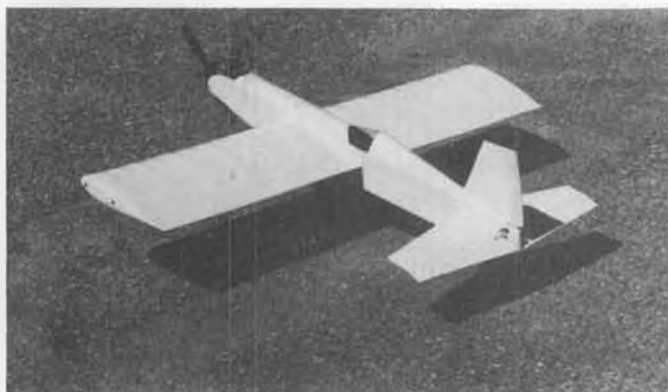
After final assembly, Box Boy's wing was covered with silkspan. All cardboard surfaces were then lightly sanded to provide a better bond for the dope. The original plane in the photos, now ten years old, was finished with Aero Gloss sanding sealer and yellow dope. Any of the modern epoxy finishes would be excellent.

Cardboard is not new to modeling. Remember Competition Models' "Paper

Tiger" pattern ship and the controversial "Westwind", by Jef's Friends. Of course, both were especially designed for cardboard construction. However, we can visualize many areas in every day model construction where corrugated cardboard could be substituted and be equal to or better than balsa for the particular situation. In addition, this would save the more expensive balsa for the areas where there is no substitute. Try as you might, balsa can't be replaced, but it's nice to know there's something that can pitch in and help.



"The paper cup . . . a remarkable strength-to-weight ratio."



Fuselage sides and bottom, all but one bulkhead, wing ribs, and sheet tail surfaces are all corrugated cardboard.



All exposed edges of cardboard are capped with balsa strips, such as the wing ribs, and the outside edges of the tail surfaces.





Orange Blossom Hobbies gave neat trophy to Les McDonald after World Champs win. Professionally made model of his "Stiletto".



Rich Leroy with his own-design "Miss Poppy" which is now kitted by Ed's Garage. Photo by "Mad Mike" Keville.

# C

## ontrol line

By "DIRTY DAN" RUTHERFORD  
PHOTOS BY AUTHOR UNLESS NOTED

### MACA '76 TOP TWENTY (ONE?)

Each year the Miniature Aircraft Combat Association (MACA) selects the top twenty Combat fliers in the U.S. by a system that I don't completely understand, but has so something to do with how many contests each flier places in. Only MACA members are eligible for this, of course, which is just fine, as the best Combat fliers belong to MACA anyway.

In this last year's results, there were quite a number of ties, which was surprising. Due to the ties, more than one person may be listed for each position, which also accounts for the fact that there are 21 people in the Top 20!

### 1976 MACA OVERALL TOP TWENTY

- |                 |                    |
|-----------------|--------------------|
| 1. Bob Burch    | 11. Mike Strieter  |
| 2. Marlin McGee | 12. Paul Smith     |
| 3. Phil Cartier | 13. Bill Budzioch  |
| 4. Jordan Segal | 14. George Connors |
| 5. Gary Frost   | 15. Neal Rose      |

- |                   |                       |
|-------------------|-----------------------|
| 6. Dan Rutherford | 16. Chuck Rudner      |
| 7. Gary Stevens   | 17. Charlie Johnson   |
| 8. Bob Naville    | 18. Mike Guthamson    |
| 9. Paul Curtis    | 19. Falcon McAllister |
| 10. Greg Hissem   | 20. Howard Rush       |
|                   | 21. Steve Sacco       |

As a rule, the results were very close, as evidenced by the number of ties, but it should be noted that Bob Burch literally ran away with the number one spot, being way ahead of number two.

Congratulations to everybody on the MACA Top Twenty . . . they all worked hard for a position. And many thanks to my friend (yes, we're still friends!) Mike Strieter, for taking the time to tabulate the results. A complete breakdown of the Top Twenty results can be found in the MACA n/l. It gives the points earned in Fast, Slow, and FAI Combat, plus a Top Ten in each event. As last year, there will also probably be information on each Top Twenty winner as to his equipment, tactics, philosophy concerning the event, etc.

I may touch on the above in a future column, but you could be sure to be in on this and many other combat-related items of interest by simply joining MACA. To join, send \$6.00 (overseas, \$10.00 U.S.) to: Tom Southern, MACA Treasurer, 2207 Paul, Longview, Texas 75601.

Who knows, you may even make the Top Twenty in '77, an honor much more meaningful than the usual dust-collecting trophies.

### SPEAKING OF THE MACA N/L . . .

I read many n/l's each month, including those generated by all of the special interest C/L groups. None are half as entertaining as the MACA n/l,

and none of the other groups enjoy the active participation of the membership, via the n/l's, that MACA does. You see, the MACA n/l is written by the members themselves. Naturally, this involves some name-calling and controversies, but it is all indicative of a concerned and active group of Combat fliers. A *very* healthy situation, in my opinion.

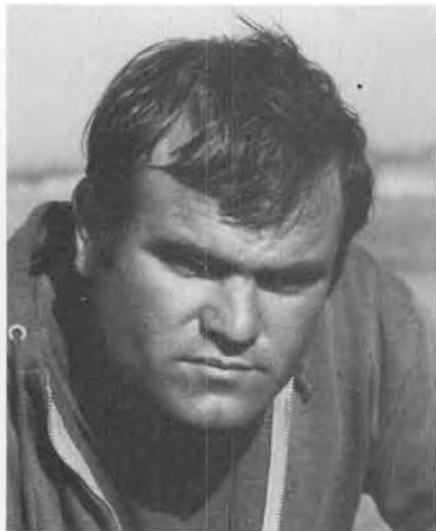
Naturally, some jerk going under the obviously phony pen name of Dirty Dan has been right in the think of things (and you thought that I was outspoken in this column . . . !), generating more than his share of controversy. No problem at all, I've



Stan Clough grabs team racer at '76 Nats. Now he'll put it down, refuel, flip, and release.



"Big" Mike Strieter who tabulated the MACA Top Twenty. Made it himself (9th).



Norm McFadden, Combat flier from Redwood City, Ca. Makes pressure regulators. Dan says this is his jovial expression!



Joe wins over John Kilsdonk in the "Who has the most back space for advertising" contest! Some guy in a white sheet came along and took the third 'K' off of Joe's shirt.

been loving it, seeing so many people take part in MACA and the Combat event cannot help but benefit from this kind of communication.

Another rabble-rouser in MACA has been Rich Brasher, possibly the most outstanding Combat flier I've ever had to fly against (I'd love to flat out-fly Brasher and lay a clean kill on him . . . maybe . . . someday). Rich is very honest in his performance claims, and has come down hard on a few people claiming speeds that only seem to be attainable during practice sessions . . . as opposed to actual Combat matches. Here's the latest from Rich:

"The current rash of B.S. about 120 mph has inspired the following limerick:

There once were some Combat fliers  
Whose mouths seemed to never grow tired.

They all claimed 120,  
Said 5% nitro was plenty,  
But at contests, all were proved to be liars."

Good shot, Rich!

#### MAGNUM C/L HANDLE

Somewhere nearby, there ought to be a picture of George Aldrich's latest release, the Magnum C/L handle. I've got a couple and they are really super.

Lighter than an E-Z-Just, close line

spacing, quick and easy adjustment, plus a very comfortable grip. And they are available in six different colors. No more trying to decide which red handle is yours, and which is the other guy's. Only problem with the handle is that the back edges are rather sharp and need smoothing. A file or sandpaper takes care of that little problem easy enough.

For the best C/L handle currently available, give the Magnum a try. For \$2.75 you can't go wrong.

#### AND ANOTHER GOODIE FROM GEORGE . . . MATTEI

Shown in another pic is the syringe offered by George Mattei, 105 Franklin Rd., Hamden, CT 06517. George advertises his syringes as holding 5 ounces, but says all will actually hold more. The one I've got has a 7 ounce capacity, which ought to be plenty. Although George's syringe isn't super-zoot like the stainless steel numbers, it is very practical, inexpensive (\$9.50 plus 15% for postage), flawless in operation, and guaranteed against most anything. I like mine and will be using it next year, that's for sure.

George also has a bunch of other items available, plus he does engine rework. Write to him and he'll send you a flyer listing it all.

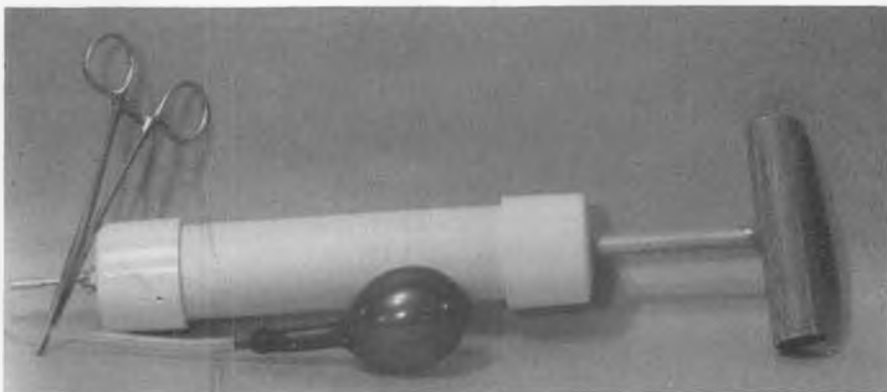
#### SCREAMING TD .049's AND NEATO WHEELS FROM KK

Recently, while testing an MRP 1/12th Scale R/C car for Unca' Bill, I got the chance to run one of Joe Klause's Custom TD .049 engines. This particular engine was set-up with Joe's own throttle sleeve and a Cox left-hand crank, which is probably not interesting to most C/L fliers, but what is of interest is that the KK engine flat smokes! If you're interested in a wailin' Cox, write to Joe for an up-to-date price sheet that covers all of his trick accessories, besides the reworked engines. Kustom Kraftsmanship, P.O. Box 2699, Laguna Hills, CA 92653. If you prefer to call, try (714) 830-5162.

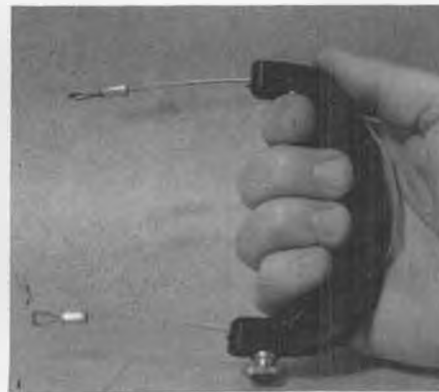
Also out from KK, and brand-new, are the 1-1/4 and 1-1/2 inch Custom Racing Wheels. These wheels look very good. They're molded right on a machined aluminum hub and the wheels themselves are made of a tough, resilient polymer of some kind. The 1-1/2 inch wheels only weigh 1/5 ounce each, so they are also quite light. Your local shop ought to have these in stock. If not, write to Joe at the above address.

#### AND NOW WE HEAR FROM THE SSF'S (SERIOUS STUNT FLIERS)

*Continued on page 86*



The GTM syringe puttin' it to a bladder. This syringe is plenty durable, plus being well made. Not very pretty, but effective.



The new GMA (Aldrich) Magnum C/L handle. Light and comfortable. Note adjustment knob.



"I don't know, Marty. What are *you* goin' to do tonight?" A bunch of 36/600 Class boats all dressed up and no place to go (l to r): Scampi, Trident, Pea Pod (MB Plan No. 4733), Huson 36, and LJ 36. Scene was the Indianapolis Fall Finale. Photo by Tom Patterson.

# STRICTLY SAIL

By ROD CARR



● The heading picture is from intrepid photographer Doug Barry. He tells me that he wound up printing the left half at a different exposure from the right half, in order to save all the detail in the wave train under the transom.

What can we learn from this view of an East Coast 12-meter on a close reach? First and foremost, we set the trend for skippers to accept large heel angles while sailing on reaches. This is absolute suicide. The boat looks like it is going fast, it's leaning way over, and just look at those rolling waves she is making. If you realize that your sails can only extract a certain amount of energy from

the wind, where would you like to use it? Piling up green water into waves is impressive, but I'd opt to have all the energy converted into thrust and take my joy from the actual speed of the boat through the water. If she is making waves, she will not be making knots!!

The wave train on this hull is pretty much related to the heel angle. The way to get rid of the waves is to reduce the heel, i.e., let the sheets out a bit. The boat will stand up, not look nearly so mean, make less waves, and GO FASTER. You should sheet out so far that the jib almost breaks into a luff. And if you have any sense, you'll keep

working the sheets so that you stay near that point of maximum efficiency. This boat is heeling because the sails are overtrimmed.

In the photo, we are able to identify the existence of too much sail twist, most noticeable in the jib, but also existing in the main. If the sail is allowed to twist this much, the bottom will be overtrimmed and stalled; the middle will be working just about right, and the head will be luffing. An unthinking skipper will cure the luffing head by sheeting in even more, thus stalling the lower and middle of the sail!! 'Tis not the cure. The cure is to rig a traveler for the sheet so that its pull is more nearly down, and also adjust the amount of offset that the jib swivel has from the front of the jib club. The smaller the distance between swivel and jib club front, the more twist a given wind will develop in the sail by causing the aft end of the club to lift. An alternative is the use of a radial jib fitting which has a capability for a vang on the jib club. This prevents the lifting when on a reach. The whole twist-control program is aimed at allowing all parts of the sail to work at the optimum angle of attack to the relative wind. Overtrimmed or stalled portions of the sail give extra heel which we don't need; while undertrimmed or luffing portions give neither drive nor heel. Twist control will minimize the amounts of both of these which exist under any given conditions.

In my own defense, I'd like to say that I do realize that not all of that quarter wave in the photo is the result of bad sail trim and too much heel. Inherent in the underbody shape of the hull are the hydrodynamic forces which can generate such waves when the hull is not heeled at all. (Look at some of the photos of VALIANT, HERITAGE, and MARINER for example.) But the point remains that it takes energy to



The weather boat's sails are absolutely perfect! Jib leech is parallel to main leech, and both sails are working top to bottom. Too much twist in rig of leeward boat. Tom Patterson photo.



make that water pile up, and that energy has got to come from the sails, thereby subtracting from the useful amount of power that can be utilized to drive the boat. As I understand it, part of this quarter wave is associated with the water breaking away from the hull surface. If one fattens his hull farther aft, the water has a tendency to remain "attached" to the hull. In part, this is the reasoning behind moving the maximum beam location farther aft on a boat. In the East Coast 12-meter class, the original class rules specified the maximum beam on deck, but not its location. In the past 5 years, the maximum beam location has crept aft from about 32 to to 34 inches to the 36 to 38 inch area. A lot of this sheer beam measurement has undoubtedly been reflected in a fattening of the underbody below it. As a result, the newer, slimmer hulls may be providing a somewhat reduced quarter wave. But before you all jump into the arena and start chopping, remember that the class rules forbids modifying a hull. A new set of motions put out by the technical committee will once and forever put a stop to further evolution in this class . . . High time it was done too.

#### MASTS

There are a lot of misconceptions floating round about that tall stick that sits in the middle of your boat, holding up the mains'l with all kinds of wires running to and from it (*Now you're using terms I can understand! wcn*) Some of them (both masts and misconceptions) can be a direct cause of poor boat performance. Often, a bad mast is the result of taking one facet of boat performance to an extreme, to the detriment of other facets. The most serious example is the continual hollering for light masts. This is not the primary requirement of a mast . . . *The primary requirement of a good mast is straightness and ability to accept a regular, controlled bend.* The good sailmakers urge you to start with a straight mast as you prepare to tune your boat. They don't mean that you have been able to pull the bows, hooks, and kinks out of that "dog leg" with all sorts of unbalanced shroud tensions. They mean that standing all by itself in the corner, with no stays or fittings, and no pulls or tugs, the mast is straight!

Let us use a 72 inch mast length as an example. Any dimensions should be proportionally increased for taller masts and decreased for shorter ones. A straight mast is one that, when supported at the heel (bottom) in a vise, parallel to the floor, sags no more than about 3/8 inch under its own weight in the fore and aft direction. Athwartships sag (when you turn the mast 90° in the vise) can be a little more, say up to 5/8 inch (See Figure 1).

Provided that the sag limits are not exceeded, the next thing you need to



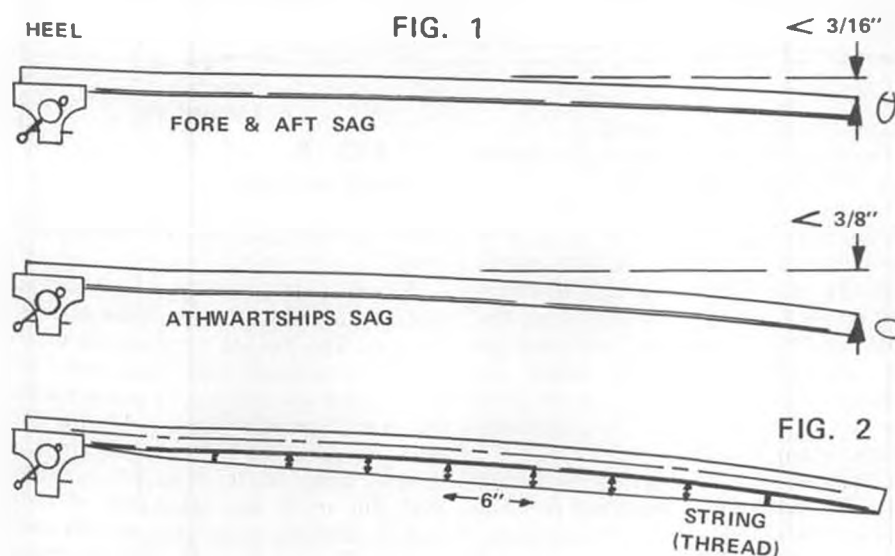
EC/12-Meter showing the excessive heeling and huge quarter-wave which develops when sails are overtrimmed. Photo by Doug Barry.

find out is if the bend is regular. Run a thread between the head of the mast and a point as near to the heel as you can. Every 3 to 6 inches, measure the difference between mast and reference thread, using a machinist's rule graduated in 64ths (Figure 2). Make a table of distance from the head versus offsets measured. Plot them on a chunk of graph paper so that the 6 foot mast is 6 inches tall on the paper, and so that 1/32 inch of offset becomes 1/8 inch. You'll wind up with a very bowed plot which should allow a fair curve to be thrown through it. Possible kinds of non-regular curves are shown in Figure No. 3.

Example A is typical of a wooden mast which has had holes drilled in it to

take a set of spreaders about 2 feet up and another hole for the jenny strut about 5 feet up. You can see how this weakens the section and makes the overall shape one of three essentially straight segments with definite angles between them. Imagine how unsatisfactory the match will be between this mast shape and a mains'l which has had a smooth luff round-cut into its leading edge. How to fix this mast . . . ? Cut it up into three pieces and use them for booms on your next boat!!

Example B is a fairly heavy mast which is probably wooden and has been tapered in the upper third. It looks like the mast will have to be severely stressed to induce any curve into the lower section. The best approach here would



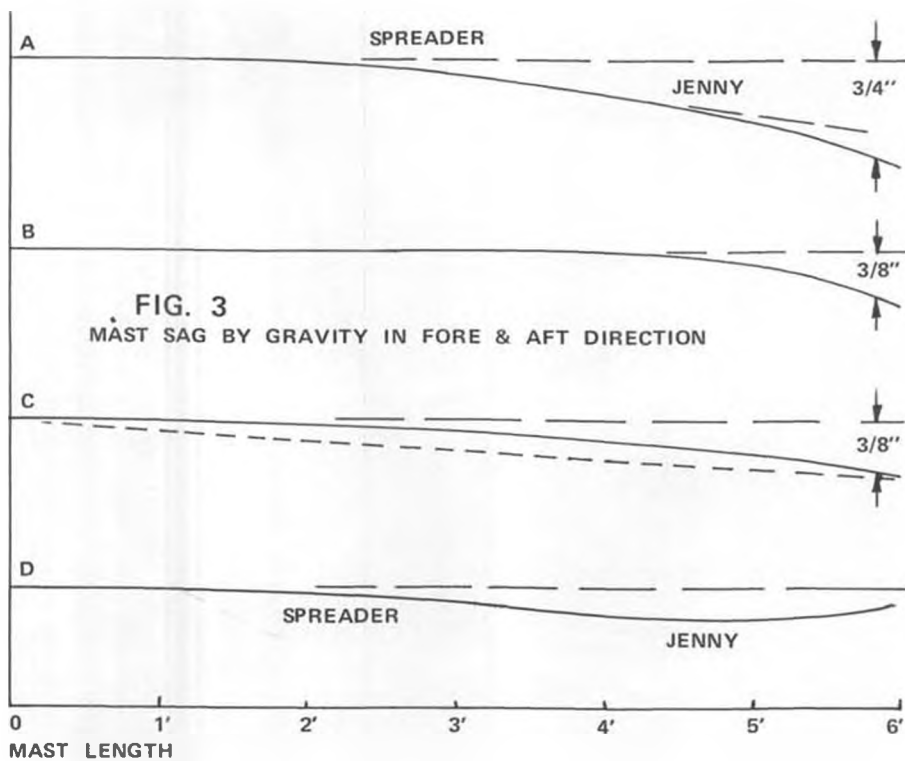


FIG. 3  
MAST SAG BY GRAVITY IN FORE & AFT DIRECTION

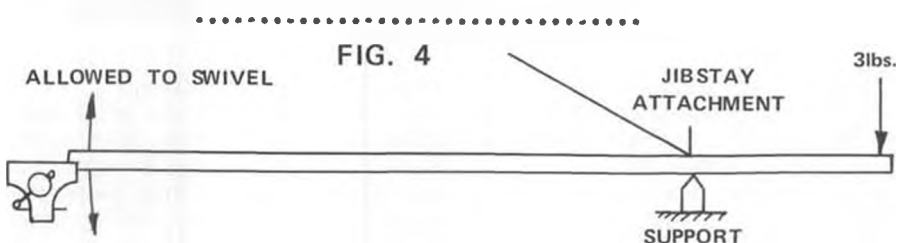
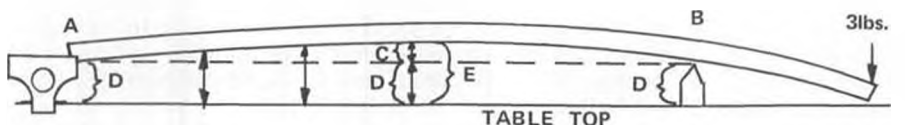


FIG. 4



POINTS A & B SAME HEIGHT OFF TABLE (D).  
PLOT OFFSETS E - D = C

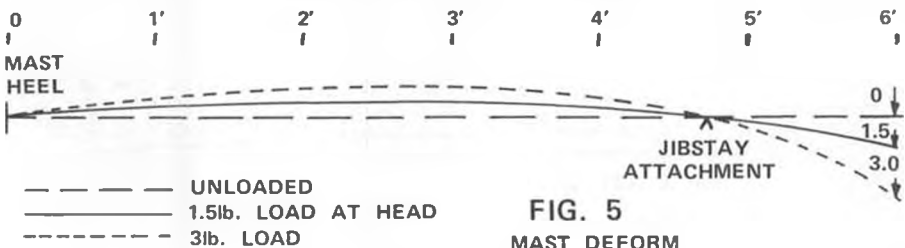


FIG. 5  
MAST DEFORM

be to start sanding a little at a time on either side of the 4 foot mark. Contrive to spread the bend both above and below 4 feet, without lightening the upper section. The potential does remain for the mast to get too limber altogether and sag a good deal more than the 3/8 inch, which has already been nearly exceeded.

Example C is what we are searching for. The regularity of the bend (as seen against the lower dotted reference line) indicates that it is probably an untapered

aluminum extrusion with no holes drilled in it.

Example D is an old mast I had lying around which came off the original Yankee. You can see it has a weak place where the spreaders penetrated, and after being sailed for a couple of seasons with the Jenny spreader fitting we built, the wood took a set that actually had a reverse bend in it. I might mention that this mast was laminated of two woods with the grain crossed. Do you get the feeling that what looked good

in 1974 has gone to seed by '77? Wood is definitely a "live" substance which responds to the tensions, compressions, and humidity with which it is faced. When was the last time you looked at your spar??

I have used a couple of wooden masts that produced no detectable sag when held in a horizontal position as we have discussed. In light to medium air their performance was excellent. They were retired when I got to the point that I wanted to be able to bend the mast with a little backstay tension. If you are working on a wooden spar, why not leave it a little heavy, maybe a little stiffer than you think is right? You can always limber it up by removing some material, and in the process you'll learn a good deal about how the shape comes and goes in it. The point that should be emphasized is that the actual weight of a mast, provided that it doesn't go over 7 or 8 ounces, is really immaterial to the practical heeling that the boat undergoes. All this talk about putting more lead in the keel is fine, as long as you can still count on a mast which meets the primary requirement . . . *inherent straightness and the ability to accept a regular, controlled bend.* When the wind pipes up, it is the wind pressure on the leech of the upper main that gives you the heel you feel, slack the sheet and/or traveler. Don't think that planing an ounce off your mast is going to make the boat stand up!!

Now we have found a way to assess the overall kind of shape we have in an unloaded mast. Our plots of sag under the pull of gravity allow us to make changes in the mast to give it more controllability as well as more regularity. A sailmaker would like to know what happens to the shape when it gets loaded by backstay tension. The difference between the loaded shape and the straight condition when it is unloaded is going to be directly related to the kind of a luff curve he cuts in your mainsail. How to find this condition is shown in Figure 4. The heel of the mast is blocked as before, but allowed to rotate in a vertical plane. We also support the point at which the jibstay attaches to the mast. Remember that we have said before in these pages that the jibstay, mast, and deck form three sides of a triangle (aptly called the fore-triangle). Unless one of them changes length, the triangle is immovable and therefore the point of jibstay attachment is locked in place above the deck. Movement of the mast can only take place between the heel and the jibstay attachment, and from the jibstay attachment up to the backstay crane at the top of the mast. We plot the table of offsets for the blocked, unloaded mast, then we put a 1.5 pound weight at the masthead and take another set. If you

*Continued on page 92*



Megow kits and materials were delivered to the dealers in this jazzy 1933 Dodge. That's a 1934 Pennsylvania truck license plate. Eat your heart out, antique auto collectors!



Megow catalogs (rear to front): 1946, 1938, 1940, and 1941. All autographed by Fred.

# a short history of MEGOW MODELS

By LAWRENCE A. TANZI and WALTER GRIGG . . . Anyone who was building models by WW-II knew the name well, and many who came along later have heard about it. Here's the whole story.

• Among the important stories in the history of American modeling is the evolution of Megow Models, from its extremely modest beginnings, to become a giant of the industry, then ultimately to disappear as a lingering casualty of the Second World War and its aftermath. To modelers now in their forties and older, the name Megow recalls the first company to bring the model kit within the pocketbook range of every boy. Not only were Megow Models universally affordable, but in its heyday, no other manufacturer offered so extensive a line for every taste. In 1941, at the height of Megow production, their current catalog (No. 10) listed a grand total of 418 different kits . . . 184 airplanes, 55 ships, 103 locomotives and cars, 28 houses and 2 race cars. In addition, the catalog offered 36 Strombecker kits, 7 American Junior (Jim Walker) and 3 gas powered race cars. Finally, Megow offered 17 different gas engines, as well as spark plugs, coils, condensers, wheels, rubber power items, shop fittings, etc. In total, the Megow list of offerings was unsurpassed in its time.

The beginnings of what would develop into the world-wide Megow Corporation took place in June 1929, when Fred Megow undertook to teach a class of school boys the rudiments of model making at Thomas Williams Junior High, in Philadelphia. Since Megow was instructing both shop and mechanical drawing there, he was the likely person for students to ask where materials for a model airplane could be obtained. As one thing led to another, many boys were soon slicing balsa (often fingers)

to the shape of solid Tiger Moths (*the early low wing, not to be confused with the famous biplane of later years. wcn*) and later, Fokker D-VIII's, under Fred's guidance. These two aircraft would be among the first put in kit form when the Megow business endeavor began.

Fred soon realized that for these projects to be affordable to most boys, it would be necessary to purchase raw materials in quantity. When the means was found, the program grew not only in enthusiastic participants, but also in breadth, as flying models were introduced. Simple R.O.G. (Rise Off Ground) models were chosen as the best means of giving the boys a rudimentary

knowledge of both the theory of flight and modeling fundamentals. While teaching these classes, Megow was himself learning and observing. He became intrigued with developing a small rubber-powered model that would be flyable in the average size living room. This eventually resulted in the first of the commercially sold Megow flying models, appropriately named the "Parlor Fly." Arrangements were made to market by mail, both the "Fly" or two solid models (developed during the same period) for the identical price of twenty-five cents. An advertisement for the solid models was placed in a 1930 edition of "Open Road for Boys" that proved successful far beyond expect-



Like a kid in the cookie jar! Walt Grigg holds 50 inch kits which originally sold for \$1.00. He would like to hear from anyone having early Megow kits and advertising.



**10 FLYING MODELS**

RISER CLIMBER  
HIRCOCYPSE  
AEROCOPA  
KIMBERLY COLLIER  
SHEENA  
FAIRCHILD  
LORINE BURTON  
COMBINATION PLANE  
WELL OPEN  
PULSATED

WHICH WING SPREAD  
CALLED PROPELLER  
CARRIED THESE FINE  
2 1/2 GLOBES OF TITANIUM  
MOUNTED Balsa WINGFORMER  
WIRE, BIRD MOTORS  
COMPREHENSIVE PLANS

**MEGOW'S**  
A Complete Model Organization

These ten centers were Megow's greatest line. There's only two in this series that MB's edit- or did not build. Fairchild was a great flier.

tations. In fact, Fred recently said, "I never saw so many quarters in my life." Only in later years, when the Megow operation was immensely expanded, would the amount of mail surpass this initial deluge.

Despite the unexpected response, Fred decided that mail order was not the way he preferred to market models, opting instead for retail dealers. As a consequence, Vic's Sundry Store, on 65th Avenue in Philadelphia, became the first of what would become hundreds of dealers in Megow Models.

Model kits, along with cement, dope, balsa sheet and strips, and miscellaneous other items were placed in Vic's, accompanied by a cigar box for the money, cash contents to be split 50-50 with Vic. Two days later, Vic called and announced that (to their mutual surprise) the kits and supplies were sold

**MEGOW'S SHIP MODELS**

THE SIKORSKY S-42 CLIPPER—The largest passenger plane in the world. Used between Miami (Florida) and Buenos Aires (Argentina). The Government reserves the right in time of war to convert this flying ship into transport service. \$2.00

SHOW BOAT—12 inches long with interior plan printed on hull black and six additional printed pieces to build up walk, stage, balcony and sternomast. Mast can be removed when model is completed and stage settings can be changed. Complete kit \$1.50.

SANTA MARIA—The famous flagship of Columbus, designed after the vessel used by the Spanish Government at the Columbian Exposition in Chicago, 1893. 30 inches overall. \$2.00. Also 18" and 24" size.

As with all Megow offerings, ship line was highly diversified. Carved hulls produced in Ocean City, N.J.

out! Fred was quick to restock Vic's and even quicker to appreciate that, "If Vic could do \$500 a year, a thousand Vic's could bring in half a million." At that time, most would view these thoughts as pure fantasy, particularly for someone in Fred's circumstances. In 1930, the Great Depression was at its peak, and if that was not sufficient, Mrs. Megow had prematurely borne twins and was in critical condition. The former had wiped out their savings in a bank failure, and the latter had created an oppressive hospital bill. These misfortunes would have demoralized most, but it seemed only to bolster Fred's determination to proceed with his models. And he did.

For better merchandising, some sort of immediately recognizably display seemed desirable. Consequently, after several attempts, Fred developed a small

**"O" GAUGE LOCOMOTIVES**

Sec. 1  
Sec. 2  
Sec. 3  
Sec. 4  
Sec. 5  
Sec. 6  
Sec. 7  
Sec. 8  
Sec. 9  
Sec. 10

NEW YORK CENTRAL 2-8-0  
Proud Indeed!!  
A REAL FREIGHT HOOP  
NOT TOO MODERN

**SCALE MODEL RAILWAYS**  
SUBSIDIARY OF MEGOW'S

If it was a model, Megow had a kit for it! The railroad line also included a large selection of HO gauge equipment.

cabinet to hold a basic minimum of model supplies . . . what would become the famous Megow "Green Cabinets." When finished, cabinets were placed in nearby locations that could be easily serviced with more supplies. A store's initial investment was \$7.50 for the cabinet filled with materials.

"Green Cabinets" were sold in Philadelphia and its suburbs. On Monday evenings, Fred delivered and serviced the cabinets by carrying new supplies in his wife's car. In June 1936, Paul Keefe,

**Three Distinct Eras portrayed by MEGOW'S MODELS**

BRASILIAN CLIPPER—The largest passenger plane in the world. Used between Miami (Florida) and Buenos Aires (Argentina). The Government reserves the right in time of war to convert this flying ship into transport service. \$2.00

SHOW BOAT—12 inches long with interior plan printed on hull black and six additional printed pieces to build up walk, stage, balcony and sternomast. Mast can be removed when model is completed and stage settings can be changed. Complete kit \$1.50.

SANTA MARIA—The famous flagship of Columbus, designed after the vessel used by the Spanish Government at the Columbian Exposition in Chicago, 1893. 30 inches overall. \$2.00. Also 18" and 24" size.

How's this for variety? The Sikorsky S-42 Clipper, was just about the only kit of this big flying boat by any model manufacturer. Show Boat was poorest seller of any Megow kit produced.

**MEGOW'S**

COMMANDER \$4.95

CADET \$3.95

PIPER CUB \$3.95

Some of Megow's many gas kits. The Zipper-like Ranger, not shown here, is the most popular today amongst Old Timers.

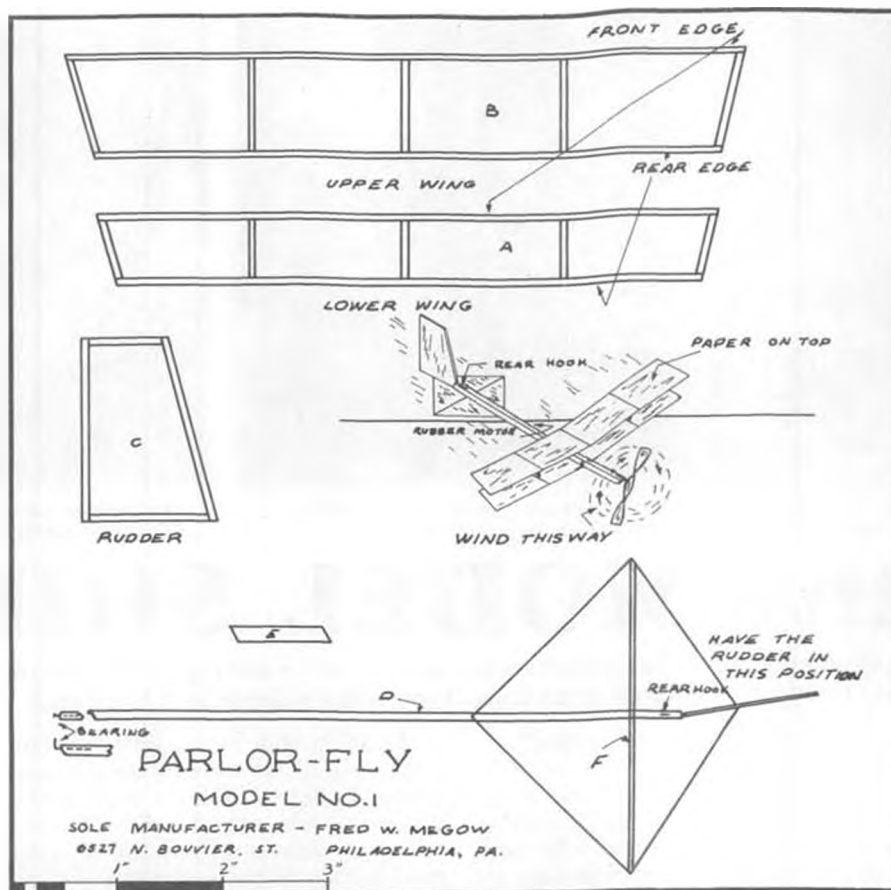
a neighborhood boy, was hired to help with deliveries, thereby attaining distinction as the first employee of Megow's Models. By the summer's end, business increased so rapidly that two separate routes were established and in the Megow cellar, quarters became so crowded that it was necessary to knock out a wall. Shortly, a larger saw was purchased and a nephew, Paul Snyder, moved in and began working for Red

began working for Fred. Snyder later became the world's first model airplane salesman.

Megow's first advertisement in a model airplane magazine appeared in the February, 1930 edition of *Model Airplane News* and featured the current mainstay of Megow offerings, "The Parlor Fly." From then to mid-1931, business continued to upswing, so more personnel were hired. Albert Beck was the company's first draftsman. Among his initial projects was an expansion of the 2/25¢ line of solid models. By now, the Megow home, as well as adjacent garages rented from neighbors, were veritable bee-hives of activity. Other employees included two salesmen (complete with company car), a bookkeeper, a draftsman, and three production men in the basement. Great dexterity was probably required to keep from stepping on each other. Such activity could not and did not escape the attention of the trade, although initial reaction fell short of enthusiasm or concern. The first known recorded comment was Fred's overhearing two men from Comet Models saying "Well, this fly-by-night outfit is nothing to worry about." At the time, it seemed to Fred like a perfectly valid observation.

Prodded by continuing expansion, Fred began searching for a more suitable site. By now, the neighbors were becoming a bit cantankerous about the Megow home. Since a cloud of balsa dust probably obscured the area, their feelings can be appreciated. The soon famous building at the Northeast corner of Philadelphia's Howard and Oxford Streets was eventually selected, and in the summer of 1933, the whole operation was relocated there. About the same time, the original firm name of "The Model Airplane Shop" was transformed to "Megow's Model Airplane Shop." It was intended to drop all but "Megow's" at a later time, since Fred reasoned that the public would recognize a single, simple name more readily.

Since its inception, Fred had been treating his model business as a part-time occupation, and had continued his full-time teaching position. In October 1933, he tendered his resignation, to the bewilderment of school officials, who could not understand why he would leave a secure job in the midst of a depression. However, the demands of



Tracing of drawing (also reduced) included with first Megow flying model, the "Parlor Fly". Wing clips, prop size, and motor stick length were not shown. Builders can fudge these.

the ever growing company did not allow Fred the time for teaching.

The new building provided approximately 50,000 square feet of factory space in a structure with three floors and basement. Housed there were automatic machines for cutting strips, a sander for finishing two sides simultaneously, barred saws, routers, bending and forming machines, as well as a variety of other special purpose machines. Using foresight, these new quarters were

adequate not only for the current operation, but also for considerable expansion when future circumstances were right.

The great year of expansion was to be 1935. At that time, distributors were utilized for all areas not directly serviced by Megow salesmen. In addition to U.S. coverage, included were two in England and one each in Holland, Belgium, Sweden, and Australia. Intro-

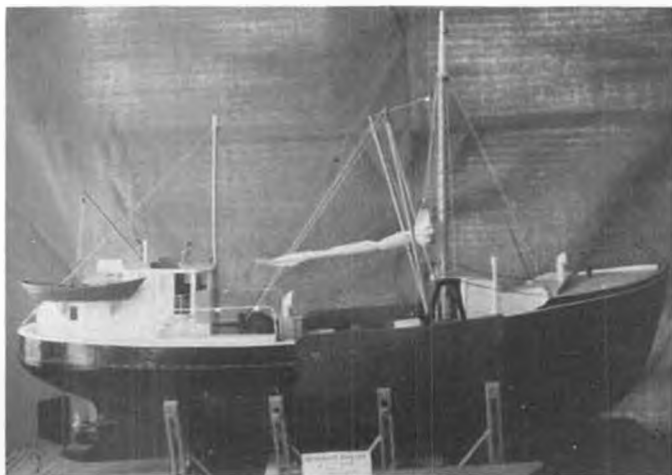
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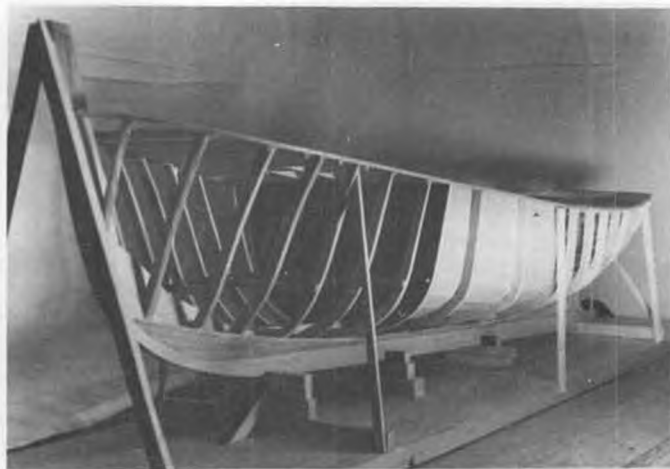
All pre-war Megow kits except the Mustang, which is in a 1930's box.



All post-war Megow kits, except A-20A, which is war-time 1/72 identification solid model.



This 1/2 inch scale Eastern Rig Scalloper is plank-on-frame built, with all interior detail, 40 inches long, by Jean Deschenes.



The Scalloper under construction. Note scale blocks and supports. Completed model worth about \$2,000.

# the MODEL SHIPYARD

Following a successful launching in January, we're casting off for another trial run in the world of model ship building . . . with a guest crew. Temporary skipper, Bill Northrop.

● Response to our "test article" on scale ship models in the January 1977 issue of MB has been, in one word, overwhelming. At first, we figured to use a letter or two in "Three if By Air." Then, as more and more mail came in, it was obvious that we'd either have to consider starting a new feature series, or change the "Letters" column title to "Two If By Sea"!

As an interim move, we have compiled some of the more informative and interesting letters received from model ship enthusiasts, and offer them for your pleasure. Meanwhile, we invite your participation in the way of articles and photos on the basics, how-to-do-its, and where-to-find-its of model ship building . . . and please note that we are combining static and operational scale. Based on some of the outstanding operational scale ships we have seen in recent years, it simply comes down to one question, "Do it float, or do it not?"

"In the Feb. '77 issue of MB, in your letters-to-the-editor column, a person wrote in crying about the plight of scale ship modelers as far as publications are concerned.

*"I have been an airplane and ship model builder for many years and I enjoy them both very much. Yes, there is a need for a national magazine on scale model ships, but I do not see one coming for awhile, as there is not a great movement among model ship builders to have such.*

*"I also feel because, of the time and research involved in creating a scale model sailing ship (for example), a national magazine would be hard-pressed to have enough material for a monthly publication on scale ships alone. A column in an established magazine is a more reasonable approach. The modeling fraternity can still exchange their ideas, can still be made aware of new pro-*

*Continued on page 74*



Model ship building student, Sandy Robins, at work on 3/4" scale New Bedford whaleboat.

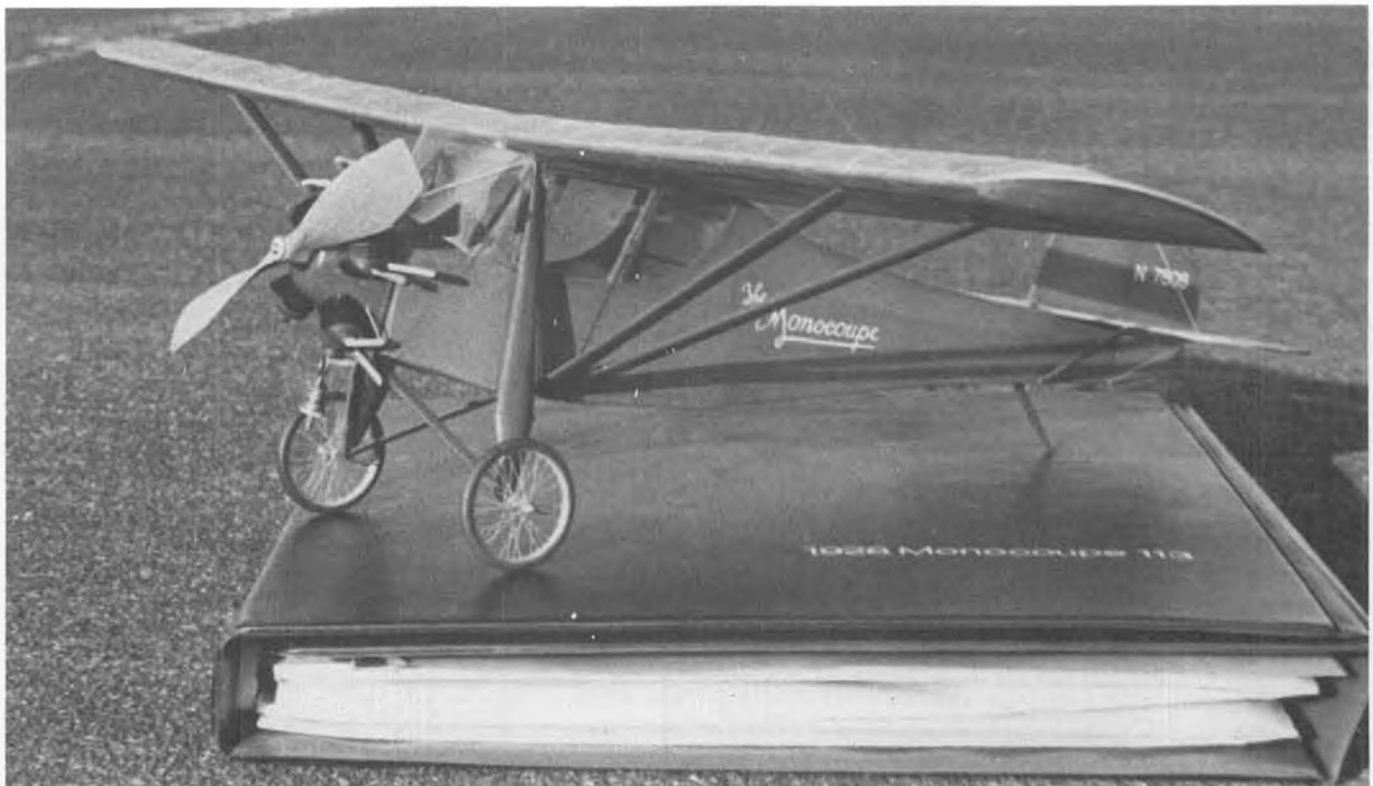


Student Barbara Fargo, carving on hull of her 3/16" scale whaling schooner, John R. Manta.



This is a completed 3/16 inch scale model of the John R. Manta whaling schooner, built by another ship modeler. It has been on display at the New Bedford Whaling Museum.





Bill Caldwell's CO<sub>2</sub> powered Monocoupe 113 sits on top of its own documentation book at Lake Charles Nationals. This month's discussion is about the proper way to prepare static scale documentation for competition.

## FREE FLIGHT SCALE

By FERNANDO RAMOS

• I imagine that many scale modelers are preparing diligently for the '77 Nats; I know that many West Coast modelers are. There always seems to be a tendency to build to the last minute, and then the scale presentation is hastily prepared. I would like to point out how to prepare your scale presentation (My opinion based on scale judging at the Nats for 5 years and numerous Flightmasters Scale Contests). One very important item to keep in mind is that the scale documentation is worth 50 points. This could really make a difference in winning or not. So don't take this item lightly.

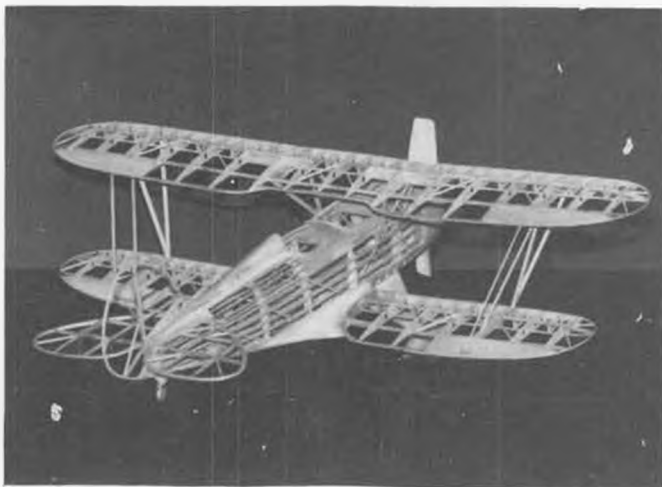
The scale presentation material

should, in reality, be gathered and prepared prior to construction of the model. In other words, researching should be accomplished first. Unless you are building an obscure aircraft, several 3-views will usually be available. If this is the case, you will have to decide which one to use. I personally feel that the only way you can determine the most accurate 3-view is to use as many photos as you can obtain of your subject, and then decide. This 3-view should then be the one you build your model from. Sometimes, the only available 3-view is so poor that photographs will have to determine just how the model should be constructed. This, of

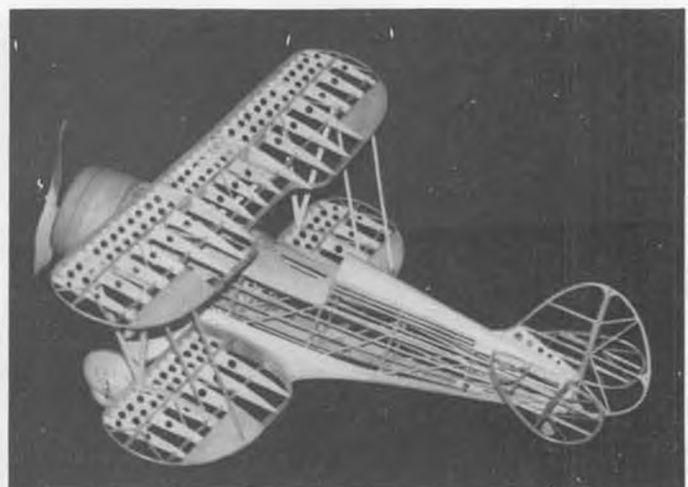
course, should be pointed out to the judges. Not only is a good 3-view important from a construction standpoint, but in the "Presentation of Proof of Scale" it is worth up to 15 points.

Before compiling your information into a useful judging tool, make yourself a scale ruler. You must have this ruler, otherwise the judges may not bother to transpose dimensions from the 3-view to the model. The object of this ruler is to aid the judges in determining the 3-view, check a certain dimension, and compare it to the model. This is particularly useful when a model is built to an odd-ball scale.

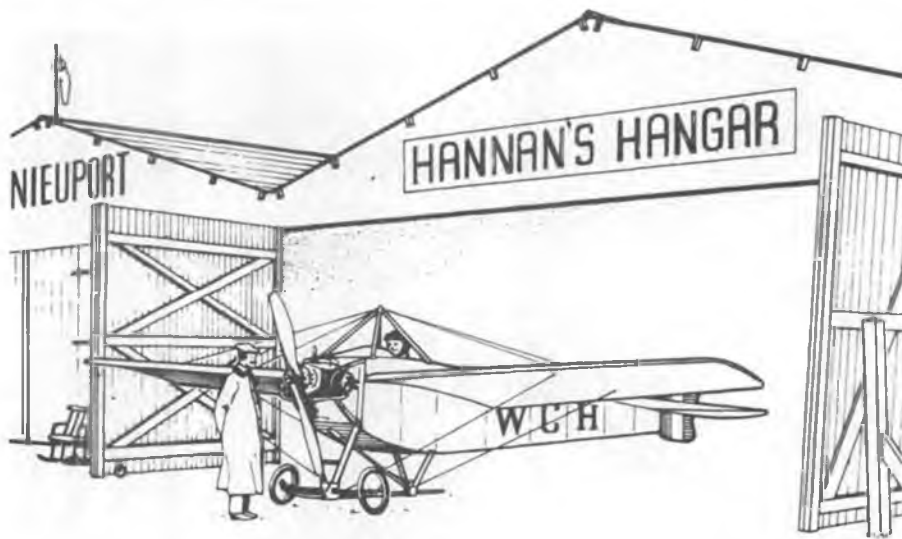
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This 24 inch span Waco F-3 was built by Bob Schlosberg, Weston, Mass. All balsa, except plastic tail wheel and Wms. Bros. cylinders.



Waco was built from 1935 Flying Aces plans, drawn by Avrum Zier. Plans are available from Golden Age Reproductions. See ad.



**Definition of a scale model: A time sponge . . .**

**HERE! HERE!**

According to *Aviation News*, Bordeaux, France, has opened the world's first airport for Unidentified Flying Objects. Major Jean Latour was quoted as saying: "The reason no flying saucer has ever landed on earth is because there are no airports for them. Our new UFOport has changed all that." The facility will be open 24 hours per day, and the outer-space visitors will receive a special bonus . . . the landing fee will be waived. The fact that the Bordeaux area is famous for its vin rouge may just be a coincidence.

**THINK BIG**

It seems a shame that model aircraft enthusiasts hold such a low opinion of

their public image. In earlier times, modelers were treated with a great deal of respect, and in fact, major contests were often supported by dignitaries, including aviation "greats", film stars, and government officials. As recently as

1953, the late Sir Sydney Camm, Chief Designer for the Hawker aircraft firm, presented the principal prizes for a British model competition. Also in attendance were Air Chief Marshall Sir Hugh P. Lloyd, Air Ministry officials, the London Airport Commandant, and several senior officers from the Australian, Canadian, and American governments.

Perhaps we need to again raise our sights, and consider the many advantages in inviting celebrities to our events? There are plenty of them around . . . and make no mistake . . . they revel in the publicity. Their very presence can add prestige and recognition to almost ANY function . . . witness the various golf and tennis tournaments. In many cases, dignitaries are flattered to be asked to participate. And, suitable "appreciation plaques" recognizing their assistance could be tendered, at small cost to the contest organizers. The public image gains could be monumental indeed.

Along these lines, Dave Gibson has offered the suggestion that the best

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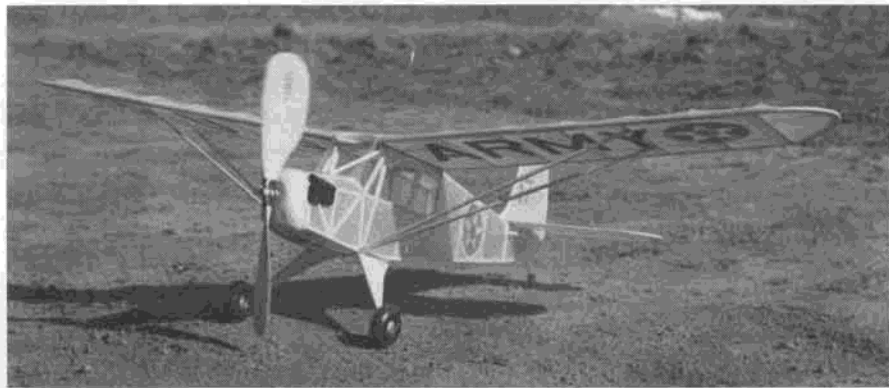
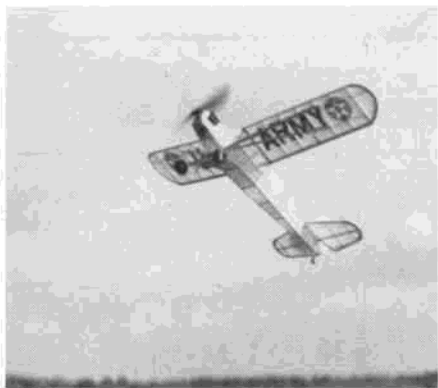
Hurst Bowers, now head of Flyline Models, "way back when", circa 1938-39. Comet Mercury on right, and original "home" design on left. Hurst says, "Everyone has to start with something!"



"Tourne Gomme", a French electric rubber winder, has counter and variable speed.



Scene at an indoor meet sponsored by the Camarillo Flying Circus, Camarillo, Ca. Lee Bryant and son, Eric, prepare their Peck Andreasson Peanut. Photo by Nate Rambo.



## ★ AERONCA ★ "DEFENDER" 0-58A / L-3A

By WALT MOONEY . . . Reminiscent of the famous Megow 10 centers, this model follows tried and true construction techniques. The odd-balls are nice for a change, but here's one you *know* will fly.

• The small, two-place airplane that was most popular and numerous during the late thirties was most often called the "Cub" or the "Piper Cub", and to the general public, all such high wing, strut-braced, fabric-covered, two-place light airplanes were "Cubs". Sometimes a name has a great deal to do with success, and Piper lucked out. As a consequence, not too many people realized that the "Cub" had any competitors.

Piper did have two very significant competitors prior to WWII. They were Taylorcraft and the Aeronautical Corporation of America (Aeronca). The Defender, or 0-58-A, or L-3A, was a product of Aeronca, which by the time the Defender was built, was called Aeronca Aircraft Corporation, and was based in Middletown, Ohio. The Defender was announced in 1941, and could be purchased with a choice of Continental, Franklin, or Lycoming engines. It was an improvement of a previous tandem trainer, was purchased by the Army for use as a "Grasshopper", and was known as the 0-58-A in military maneuvers in the south-

western part of the U.S.A.

The reasons for the ascendancy of the Cub over the Defender, should be attributed, in the opinion of the author of this article, to two things. First, it was a little more crowded in the cockpit, and the Cub was crowded enough. And second, its flying characteristics were not as nice, especially with respect to adverse yaw due to aileron use, and directional stability. Therefore, it was harder to fly well and somewhat less forgiving of ham-handed pilots.

These particular short-comings are certainly not detrimental to free flight scale models (no ham-handed pilots; no pilots, in fact) and may even be beneficial in a peanut, where they tend to give some inherent spiral stability. In any case, the Defender makes a good Peanut.

Construction of this model follows the tried and true construction techniques. In fact, it might almost be considered old-fashioned.

All structural parts, with the exception of the landing gear wire, motor peg, and propeller shaft, are balsa.

The fuselage is made by laying down

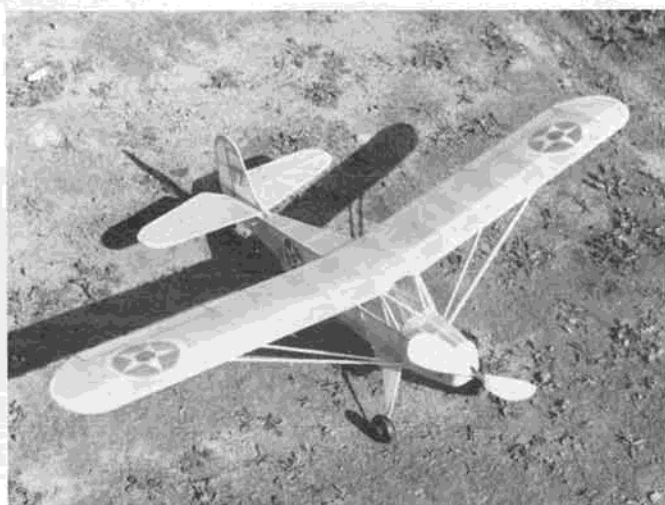
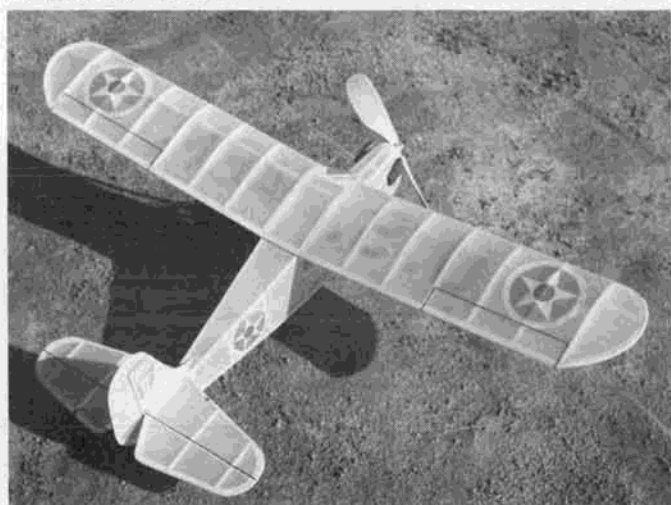
two fuselage sides over the plan. The hatching in the side view indicates how the side structural pieces are assembled. When the two sides are dry, remove from the plan and separate them, using half of a single-edge razor blade. Then cement the sides together at the aft end and cement cross braces in place top and bottom working forward to the nose. Add formers 1, 2, and 3, and then add the 3 nose stringers. The nose block is carved from quarter-inch balsa. Cement a piece of one-eighth balsa to the back of the nose block after cutting it to fit snugly in the opening at the front of the fuselage structure.

Use one-eighth sheet balsa to cover the bottom of the fuselage forward of the landing gear. Then carve this to the contours shown in the front and side view.

Bend the landing gear wire and cement it in place.

The wing uses the sliced-rib technique for lightness. Build it over the plan by pinning the leading and trailing edges in place. Then cement the bottom of the ribs in place. Next cut out the

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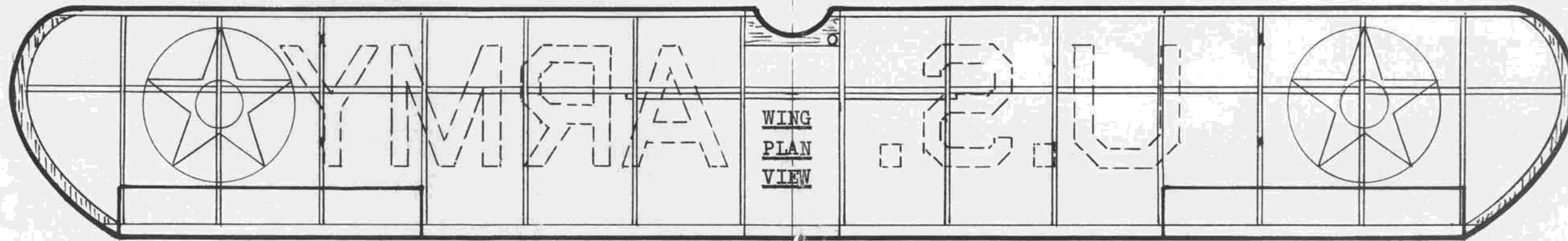


What can you say about a model so simple and basic as the "Cub-like" Aeronca L-3A. It's the elementary scale model airplane.

Only exception to the dime Megow model type construction is the sliced-rib wing assembly. Model is an excellent flier.



COLOR SCHEME SHOWN FOR AN AERONCA O-58-A USED IN PRE- WW II MANEUVERS. BASE COLOR OLIVE DRAB, STAR INSIGNIA TOP AND BOTTOM OF BOTH WINGS AND ON BOTH SIDES OF FUSELAGE. WHITE CROSS BOTH SIDES OF FUSELAGE. BLACK "U.S. ARMY ON UNDERSIDE OF WINGS.



USE 1/16 BY 1/8 FOR LEADING AND TRAILING EDGE AND THE SPAR.



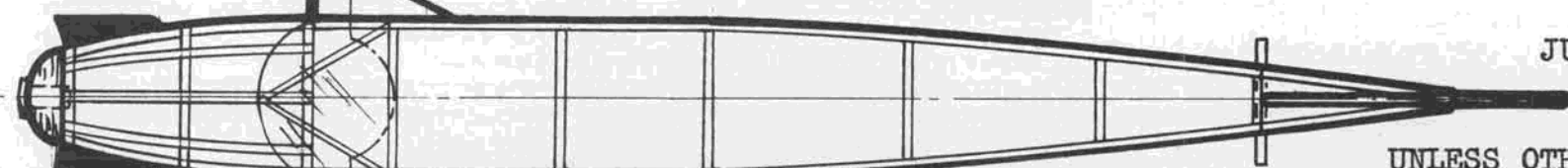
TRUE SIZE  
WING STRUT  
BASS WOOD

MONOFILAMENT FISHING LEADER TAIL  
BRACE WIRES.

CUT DIHEDRAL  
BRACE FROM HARD  
1/16 SHEET BALSA

LANDING GEAR  
FAIRING  
1/32ND SHEET BALSA

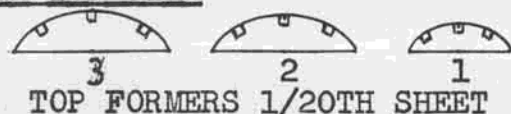
1/16 DIA. ALUMINUM TUBE REAR MOTOR PEG.



UNLESS OTHERWISE NOTED ALL PARTS ARE  
MADE FROM 1/20TH SQUARE STICKS OR  
CUT FROM 1/20TH SHEET  
BALSA.

CARVED BALSA  
DUMMY ENGINE  
CYLINDERS.

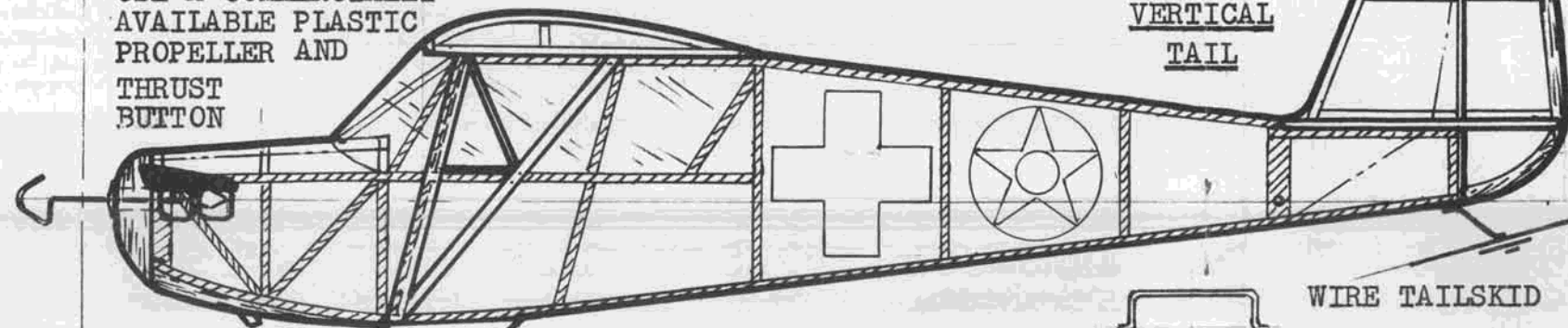
FUSELAGE TOP VIEW



FRONT VIEW

USE A COMMERCIALY  
AVAILABLE PLASTIC  
PROPELLER AND  
THRUST  
BUTTON

VERTICAL  
TAIL



WIRE TAILSKID

1/20 BY 1/8  
TRAILING EDGE

HORIZONTAL TAIL

CARVED BALSA  
COWL BOTTOM.

BUILD TWO SIDES OVER THE  
HATCHED STRUCTURE .

LANDING GEAR  
WIRE PATTERN

COVER WITH TISSUE, WATER SHRINK AND GIVE THE FUSELAGE  
TWO COATS OF THIN DOPE, REST OF AIRPLANE GETS ONE COAT.

*By Matt Mooney*

A PEANUT SCALE OF SEVERAL FACES: AERONCA O-58-A, OR L-3A, OR DEFENDER TRAINER.





Velie Monocoupe, built from Flyline Models kit, placed first in Senior FF Scale at the 50th Nats, with Cox .010 power.

## The 1/2-A SCENE

By LARRY RENGER

• This month, let's take a break from technical stuff, charts, and lists to see a bit of what's happening out there. Although the major amount of 1/2A activity centers around the .049 engine, there are much smaller engines available. Several readers have sent photos of their models using sub-1/2A powerplants, and here they are:

The first model looks like your garden variety National's competition stunter, casually tucked in King Kong's pocket. In reality, the model is one designed and built by Tom Lay, who is standing in for King Kong in this photo. Power is the Tee Dee .010 engine, fed by a 1/4 oz. tank for a 5 minute run. All-up weight is 3 oz.,

wing area is 75 sq. in. Tom said in his letter that he can fly the entire AMA pattern with this miniature model, on 20 feet of .008 braided control line, or 22 feet of .004 solid line. The model is fully decorated with a multi-color paint scheme, and ink line detailing, just like the bigger models, and actually took just as long to build! Although Tom didn't mention it in his letter, it looks as though the airplane does not have coupled flaps. This is reasonable, since flaps really only "clean up" a pattern, they do nothing for maneuverability if your wing loading is reasonable (there is no hope, if your wing loading is unreasonable). Incidentally, Tom is putting out some specialty competition

stunt goodies for the (ugh) big models. (T&L Model Specialties, P.O. Box 6052, Torrance, CA 90504).

Next model is rather interesting, as it was designed and built in response to my column on wing loadings and scaling. Ron Whittman, many times Nationals record holder in indoor hand-launched glider, is secretly an R/C enthusiast. Actually it's not that big a secret, since Competition Models has kitted his Easy Riser R/C glider. Anyway, Ron wanted to see what would actually happen if you tried to build an .020 powered pylon racer. The answer is shown in the photograph. All-up weight, with a rather heavy, prehistoric Orbit radio system and foam wing, is 9 ounces.



This rudder-only glider is over-powered with a Tee Dee .020!



Ron Whittman, with his experimental .020 powered pylon racer. It has flown with an .010.



For the lightest radio control equipment possible (rudder-only), Ace Radio is the Champ. Airborne weight of 2 oz. is possible!

Flight performance is very fast, but definitely down from the similar type of .049 model. Ron says that pylon turns and simple loops and rolls are accomplished with ease. Climb is a bit slow, vertical rolls are out, and you better be in the right place, pointed at the landing strip when you run out of fuel. The airplane does glide, but maneuverability drops way off when the engine quits.

Ron's little gem is covered in metallic blue Solarfilm on the wings, transparent yellow Monokote on fuselage and tail. It's a real charmer. He inset a small spar into his custom cut foam wing for added rigidity. Control is by aileron and elevator.

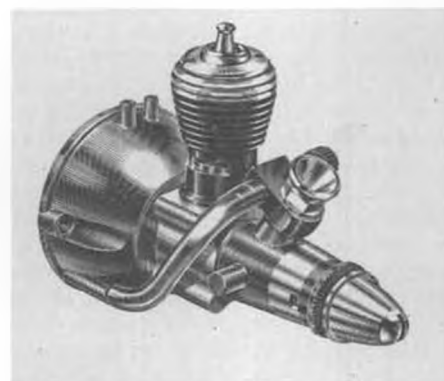
Just to see what would happen if he went still further, Ron took a Tee Dee .010 and installed it in place of the .020.

Despite universal negative vibes by his flying buddies, the little model flew. Ron said that the 50% further reduction in power resulted in a model which flies very nicely in straight and level, but climbs quite slowly and must be dived to go through a loop. Actually, that isn't bad for a 1/2 ounce motor hauling seven ounces of radio, and some airplane in addition.

What did Ron find out? First of all, he likes his son's built-up wing version better. Second, to get top performance, he would need one of the new super-light radios, such as Cannon or Litco, or the units now being developed by ACE and rumored at Kraft. (This "Krafty" rumor was picked up at the MAC Show in Anaheim last May, so if its gonna happen, it should be soon). With a 3-1/2 ounce radio and 3/4 ounce engine, Ron



Tom Lay can carry his .010 powered model of a competition C/L stunter in his shirt pocket. Weight 3 oz., area 75 sq. in.

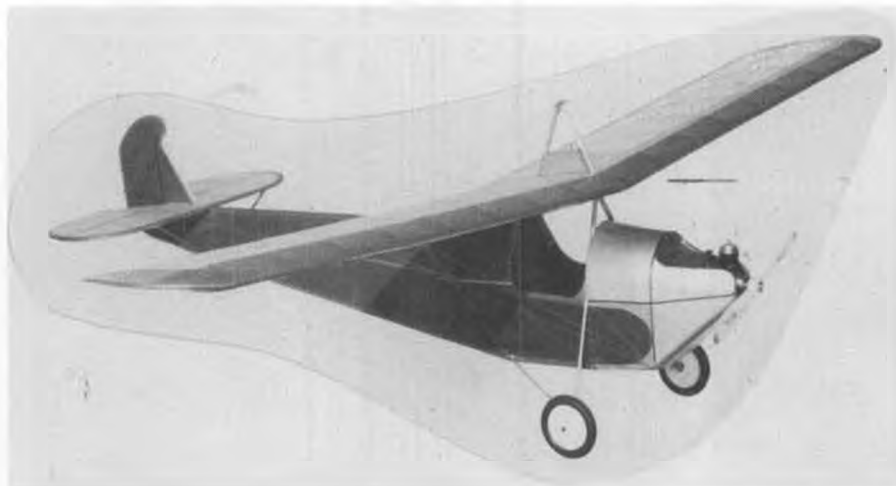


The very popular Cox Tee Dee .020.

figures he could design and build a "Master Builder's only" model at around 4-3/4 ounces. Keep watching, maybe he'll actually do it.

Getting back to radios for a moment,

*Continued on page 100*



This 1930's Longster is kitted by R/N Models. Span is 36 inches, and it only needs an .020 for power. R/N produces several Classic Era scale model kits for small engines.



Davies-Charlton Dart diesel .036 (.55 cc), weighs 1-1/4 ounces.



Florida's Rex Hinson points out that patched Monokote reduced his big Satellite 800 to a "Satal 80! King Orange Internats, 1976.



Canada's Pete Allnut rigs turbulator on his all-balsa winged A/2. Note ply outrigger ribs to hold elastic shirring turbulator line.



Georgia's Jim Lewis and his giant Unlimited. John Gard influenced, 3-minute maxes on 60% turns.

# FREE FLIGHT

By BOB STALICK

• With the weather being really nasty to most of the U.S.A. as this is written, it is with some degree of selfishness that I report that here in the Northwest, we have been enjoying just super flying weather for the last couple of months. Unfortunately, most of us are so conditioned to rain that we haven't taken advantage of the good conditions to go out and test the latest creations. But if you've been housebound and have been suffering cabin fever, then you've probably designed and built a whole new stable of ships to use in the upcoming free flight battles. If so, it should be a good year for all of us . . . with the Nats finally on the West Coast, it will be especially good for those of us who live on this edge of the world.

So much for speculation. There's a big column ahead of you this month, and if you haven't begun building the

new ships yet, I've got some recommendations for you later on, so let's get with it.

## APRIL MYSTERY MODEL

The Mystery Model this month should not be a big surprise to those who have been following the Cargo scene for the past 20 years or so, as this was one of the biggies. However, some of the whipper-snappers may have trouble with the name. It was powered by the then-standard Cox Thermal-Hopper .049. With a wingspan of 109 inches and area of 1050 sq. inches, it was a real giant. If you know the name of this weightlifter and you get it post-marked to WCN soonest, you'll win one dozen consecutive Model Builders. Hop to it.

*(It's about time we got up to date on our Mystery Model winner announcements.*

*For November, 1976, Phil Oestricher, Rosamond, California, and John Bortnak, Calgary, Alberta, Canada were tied for first in identifying Ernie Shailor's "The Happy Medium."*

*Dentist Anthony Wojcicki, Nashua, New Hampshire, was first of many to identify Dr. Stan Hill's "AMAZOOM" in the December '76 issue.*

*Roger Lapp's "Foamee" really turned out the answers to the January 1977 Mystery Model, but Dan Lockhart's response, from South Daytona, Florida, had the earliest corrected postmark.*

*In our letters to the editor this month, we told pioneer microfilm and gas modeler, Herb Greenberg, that he'd have to wait until May to find out the answer to the February 1977 Mystery Model. As it turned out, the deadline has passed, and to date, he was the only one to even try to identify the little*



Ron Sharpton (Florida) with silver and blue Monokoted rubber speed design by Steve Bacom, who won event with 67 mph.



Georgia's Harry Grogan readies his Class C Monokoted "Witch Doctor 800" . . . bigger than he is. All photos taken at KOI '76.

indoor ship named "Mikey", from the 1961 Air Trails Annual. We are therefore naming him the winner of the big "E" for effort . . . plus a subscription.

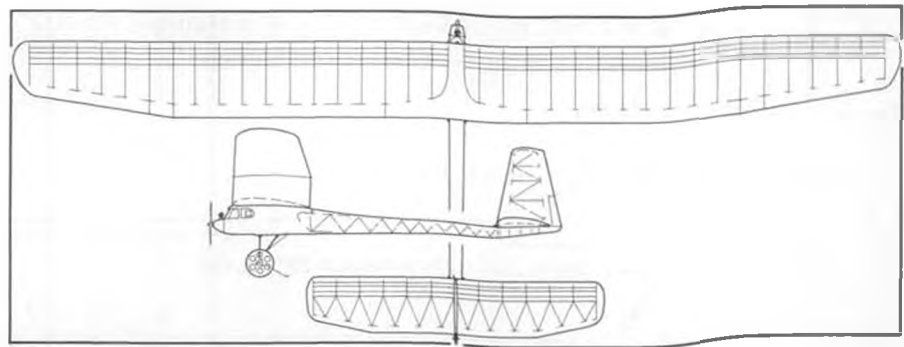
And because we're running late with this issue, we already have our winner for the March Mystery Model, and a nice guy who says "Even if it isn't, I still enjoy your magazine the most! Well, Artie Jessup, Hampton, VA., you're right, it is Fred Salmon's "Da Box". Ed Turner, a Texas flying buddy of Fred's, from U.S.A.F. (S.A.C.) days, reports that the 485 sq. in. A/B version was a true 5 minute ship back in 1958. At the USAF World Wide held at Norton AFB (site of this year's Nats indoor competition), Fred was doing 5 minute maxes early in the morning with a 20 sec. VTO. He was also one of the first to use a speed, set-up on FF; high nitro and a pen-bladder fuel system. wcn)

**DARNED STRANGE AIRFOIL**

For three years, the Darned Good Airfoil series has been a favorite feature. There have been some of the world's most popular and efficient sections featured each month. The names are nearly household words (if you live in my house, anyway); Benedek, Goettingen, Clark, NACA and the like have made it on these pages. So, now, in a fit of fever, I would like to present to you a modification of the DGA, called the DSA . . . Darned Strange Airfoil. Our feature this month is the 242-G, and it was designed to be used in models which had to lift a bunch of weight. As you can see from the numbers, it is over 16% thick at about 30% chord. It also has an 4.9% underchamber way back at 70% chord. What would you use this section for in the current FF scene? Beats the hell out of me, but you might consider it if you want a high lift, high drag airfoil in a model of low power. It's probably best suited for cargo or the like, but I wouldn't count on it. Next month, we'll get back to sanity with a real DGA.

**APRIL 3-VIEW SA-HAL-LEE A/Z**

Last month, I presented to you the circle tow hook designed by Marc Nagasawa. This month, I would like to feature the plans for the model which uses this fine, homemade tow hook. This is a very straightforward and simply



**APRIL'S MYSTERY MODEL**



Florida's "Bucket" Johnson and Rebel flag-decorated Class 'C' model enlarged from his Sifleet design FAI model.

constructed model that would perform well with the now-standard circle tow-hook or with one of the less complicated kinds of hooks from FAI Models Supply. So, if you are looking for such a model, give the Sa-Hal-Lee a try. **FAI PROGRESS**

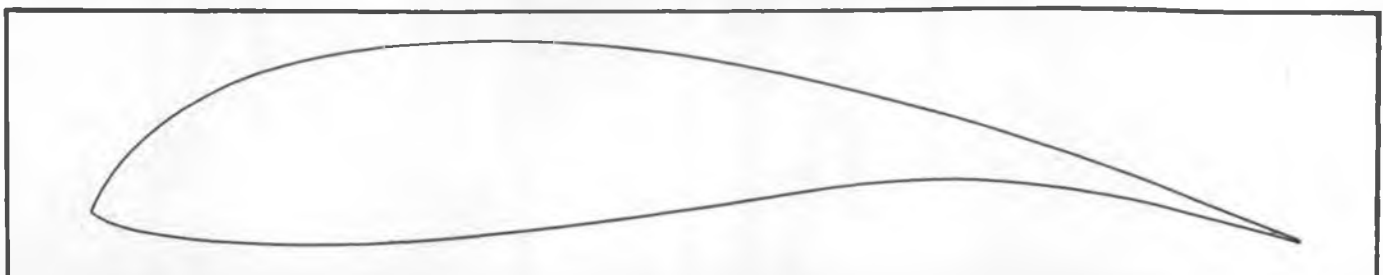
Some news on the FAI Front. This is the year of the Qualifying Trials and Semi-Finals. In 1978, the FAI fliers who end up at the tops of their respective heaps in the semi-finals will be able to fly for a place on the 1979 World Championships team. So, if you are interested in giving FAI competition a try, check you local newsletter (or AMA's publications) for the location of the next Qualification Trails or FF Contest. You can qualify at any FF Meet. All you need to do is purchase an FAI Qualification Performance Affidavit

from AMA at a cost of \$5.00 per event (you must specify Wakefield, Nordic, or Power). Or you can purchase an Affidavit from your local Qualifying Trials C.D. at a cost of \$6.00. If you have an affidavit, you can fly until you make the necessary minimum time of 14 minutes in 7 flights.

Qualifications will be accepted until August 14, 1977 (the last day of the AMA Nationals), so there is plenty of time for you if you get right on it. Semi-Finals will be held in 6 to 8 places throughout the country during the 1977 Labor Day weekend. Usually, these are set in geographic regions so that few people have to drive over 500 or so miles in order to get to one.

From the Semi-Finals, approximately 30 people . . . the best of the fliers at the Semi's, are advanced to the Finals,

**DARNED STRANGE AIRFOIL – 242-G**



STATION	0	1.25	2.5	5	7.5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	5.7	8.6	10.4	12.4	13.9	15.2	17.2	18.4	19.5	19.4	18.2	16.2	13.5	10.4	7.1	5.4	3.5
LOWER	5.7	4.7	4.6	4.1	3.8	3.6	3.3	3.2	3.4	4.5	5.9	7.4	8.1	7.5	5.8	4.6	3.2





## LIST OF COMPETITION FREE FLIGHT KITS



Tom McLaughlin, '77 FAI Team member, tunes his Rossi powered "Swinger".



Fred Anderson, of Indiana, with his Half-A Satellite 320.

Design Name	MFR.	Wing Span (inches)	Price
<b>HAND LAUNCH GLIDERS</b>			
Bo Weevil	Matt Gewain	17	\$ 2.49
Sweepette	Matt Gewain	19	\$ 2.49
Polly	Matt Gewain	18	\$ 2.49
Flash	Matt Gewain	17	\$ 2.49
U.S. Kid	Matt Gewain	18	\$ 2.49
Eagle	FAI Models	20	\$ 2.25
Eaglet	FAI Models	18	\$ 1.95

<b>A/1 GLIDERS</b>			
Top Kick	Jetco	47	\$ 8.75
Jetstream	Midwest	48	\$ 7.95
Starstream	Midwest	48	\$ 9.95
Asteroid	British Import	48	\$ 7.95

<b>A/2 GLIDERS</b>			
Ultimate Dragmaster	R.M. Enterprises	80	\$22.50
Dragmaster	Kyosho	76	\$14.95
Nova	British Import	78	\$16.95
Talon	Jetco	80	\$21.50

<b>COUPE D'HIVER</b>			
Slats	R/N Models	34	\$ 8.95
Coupe DeVille	Blue Ridge Models	35-41	\$12.50
Tyro	Tyro	38.5	\$10.95

<b>UNLIMITED RUBBER</b>			
Coupe DeVille	Blue Ridge Models	35-41	\$12.50p.p.
Tyro	Tyro	38.5	\$10.95p.p.

<b>GAS MODELS</b>					
Design	MFR.	Wing Span (flat) (inches)	Wing Area Sq. In.	Engine Size	Price
Starduster X	Competition Models	46.7	301	.049-.051	\$ 8.50
Starduster 350	Competition Models	50	360	.049-.051	\$ 8.95
Hydrostar	Competition Models	46.7	301	.049-.051	\$ 8.50
Orbiter	Competition Models	41-51	279-309	.049-.051	\$ 9.50
Witch Doctor X	Sig	51	309	.049-.051	\$ 9.50
Mini Pearl	Kitco	36	216	.049-.051	\$ 9.95
Satellite 320	Satellite City		320	.049-.051	\$12.95
Okie Bird	ClemCraft	45	296	.049-.051	\$ 7.95
Susie II	Linn Models	48	284	.049-.051	N.A.
Tornado	Jetco	48	261	.049-.051	\$ 9.95
Ramrod 250	Sig	40.5	250	.049-.051	\$ 8.50
Sundancer	4K's	46	317	.049-.051	\$ 8.50
1/2A Galaxie	Anderson Enr.	48	325	.049-.051	\$ 8.95
Hi-Thrust Viking	Goldberg	48	330	.049-.051	\$ 9.95
Satellite 450	Satellite City		450	.15 -.23	\$21.50
Midi-Pearl	Kitco		450	.15 -.23	\$19.95
AB Galaxie	Kyosho	66.5	575	.15 -.23	\$12.95
Starduster 600	Competition Models	60.2	600	.15 -.29	\$14.95
Satellite 788	Satellite City		788	.29 -.41	\$25.00
ABC Scrambler	Sig		570	.15 -.35	\$14.95
Starduster 900	Competition Models	73.2	900	.19 -.45	\$19.95
Witch Doctor 800	Sig	75.5	828	.29 -.45	\$16.95

which are held during the late summer of 1978.

FAI is an enjoyable aspect of the hobby, and usually draws many of the better competitors into its fold. If you would like to get into FAI events, send off to AMA for your Affidavit, or if you would just like to see what all the noise is about, drop in on one of the Qualifications Trials in your area. You'll be pleasantly surprised and, hopefully, you'll see fit to join in on the fun.

### TEAM MANAGER SELECTED

By a majority vote of the 1977 team members, the FAI FF World Champs Team Manager has been chosen. He is John Lenderman, long-time modeler, AMA National Champion, FF Record Holder and two-time member of the Wakefield team. John has already begun making a number of plans so that our team will be at its competitive best when it gets to Roskilde, Denmark in early July, 1977.

If you are able to get to Roskilde to assist with the team, or if you have some other kinds of help to offer, drop John a letter. His address is Rt. 2, Box 551, Clatskanie, OR 97012.

### SOME KITS FOR YOUR BUILDING PLEASURE

Currently, there are a large number of free flight kits on the market. Many of these kits are manufactured by small "cottage industry" concerns, often the

designer himself. In fact, even though you might not be able to find some of the kits listed below on your local dealer's shelves, most are available via mail order from the kit-maker himself. Some are available from free flight specialty houses such as FAI Model Supply. A quick perusal of the ads in Model Builder will give you the addresses of most of them. So, from the pages of The Boeing Hawks Newsletter, we present to you a comprehensive (though probably not totally complete) listing

of competition free flight model kits.

Final Comments: Every one of these kits has proven itself not only in the market place but also on the contest circuits. Some of the prices may not be current, but should be close to being accurate. Since the quality of some of the kits is variable, it might be a good idea to check them over first.

STERLING RUBBER POWER STRIP -- The final report.

*Continued on page 97*



Gail Roberti provides a pleasing background for husband Ron's A/2 Nordic, "Volare". Though a top competitive machine, the construction is more time-consuming than complicated.

## A/2 NORDIC "Volare"

By RON ROBERTI . . . Ron takes the mystery and complication out of building a top competition model. Only the labor remains.

- Volare in Italian means "to fly", and this bird flies. Built mainly, as you can see by the heavy spar and cross-braced construction, for the windy Oklahoma weather, consistent dead air times of over 2:30 are common. Designed mainly for the competitive flyer, a novice with good building ability can

complete it with little trouble. Don't let all the little sticks fool you. If you pick your wood carefully, you can build it pretty close to minimum weight. My airplane weight is 15.5 oz. A little overweight, but the performance is excellent. Take your time and build it right. Let's get started!

### FUSELAGE

Cut the main fuselage support from 1/4 inch plywood, using the template on the plans. Cut a slot about 1/16 wide as shown by the dotted line for your auto rudder line. A Dremel motor tool is handy here. Do not drill the holes for the wing wires at this time. Cut your favorite light weight fiberglass tail boom to 30 inches long and epoxy it to the main support as shown. Shave the support for a good snug fit, making sure that the top of the boom is straight. Drill the holes for your D.T., auto rudder lines, and stabilizer adjustment screw, as shown, and tap the adjustment screw hole to 2-56. Now, with your motor tool, cut the slot in the lower rear portion of the tail boom for the sub-rudder 1/16 wide (See plans. Please combine the use of the plans with the text and you'll find it much easier to build).

Make the stab platform as shown of 1/16 plywood and epoxy to boom at the marked location. Cut all lightening holes wherever shown, as any weight you can save in the tail will help to keep the total weight down. Now cut two sheets of light 1/4 inch balsa and glue with white glue to each side of the main support. Lay it down flat and put some books on it until dry. While this is drying, go out and buy a good cigar in an aluminum tube wrapper. This will be your ballast box and nose cone. Cut off the top portion to the size shown and slip it into the slot of the main support, twisting it as you go to cut right through the balsa. Leave the cap on, as these tubes are very soft and this will help to prevent damage. Now pull it out and remove the paint from it. Polish it to a



Rubber band around dress snaps assure that wing will stay in place. Aluminum clip keeps trailing edges aligned, relieves towing stresses.



Front end machinery. Russian circle-tow hook. Extra line trips timer when hook releases. Vane protects hook. Cigar tube nose.







## A LOOK AT **MODEL ROCKETRY**

By DOUGLAS PRATT . . .

• In February's column, I mentioned that I'd be attending the Hobby Industry Association of America trade show in Houston, and passed along some advance word on new rocketry products. As soon as I made it home from the show, there was the February issue waiting for me, and I found to my surprise that my predictions on the various releases were accurate. Centuri is now shipping its new high-powered "Super C" engine, and I've seen the new Super Kit, the Scorpion. They



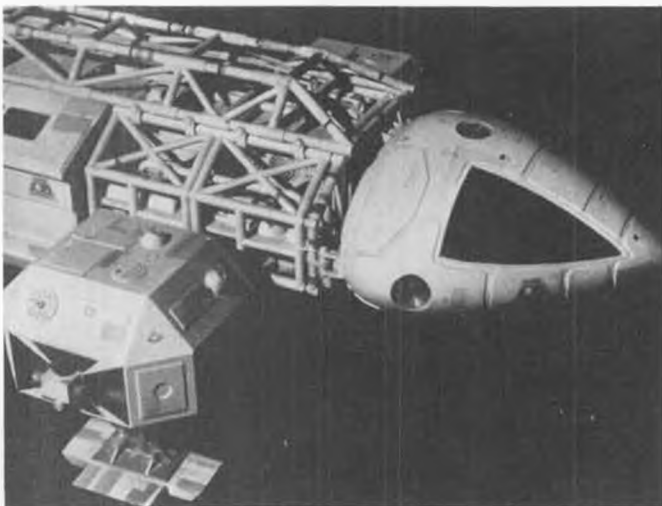
King Kong is a midget, compared to Brian Johnson! He's dripping smoke on a spaceship's graveyard, on "Space: 1999" set. Photo copyright A.T.V. Licensing, Ltd.

weren't kidding; it's about the strangest-looking thing I've ever heard anyone claim to be able to fly. They promised me (after vicious threats) a chance to thoroughly review the bird once the kit comes out, and I'm looking forward to it.

Estes has also released a number of new kits. One immediately caught my eye; a scale model of the Scout, NASA's only solid-fuel satellite rocket. I've been having a love-affair with Scout for years, since a model that Mike Howell and I collaborated on placed in C division Scale at ECRM-9; and I had recently come across some terrific Scout blueprints and pictures, thanks to Richard Huang, who works at LTV Aerospace, the firm which builds the real bird. The Estes model, designed and built by Mike Dorffler (of Cineroc fame), looks to be very nice indeed, and when I review it I'll publish enough data so that you can enter Scale events with Model Builder as your scale substantiation.

The most exciting news to come out of the HIAA show for rocketry, however, was the long-awaited change in the National Fire Protection Association's Code for Model Rocketry. NFPA is a very prestigious group, and the previous Code has been ratified by most states, and used as the basis of model rocket laws by the rest. The new Code reflects the fact that model rocketry has been proven to be a safe activity over its 20-year existence. It is more lenient than the old Code. It also extends its safety regulations to the water rockets you pump up with air and the little jobs that pop up from a vinegar-and-soda reaction; a worthwhile addition, since the manufacturers of these little items now have safety restrictions that they are asked to design into these devices. You can get a copy of the new NFPA Code, by dropping a line to Estes Industries, Penrose, CO 81240. Mention that you read about it here, please.

Moving into the mainstream of this



Close-up of a "real" Eagle. Incredible detail! Photo copyright A.T.V. Licensing, Ltd.



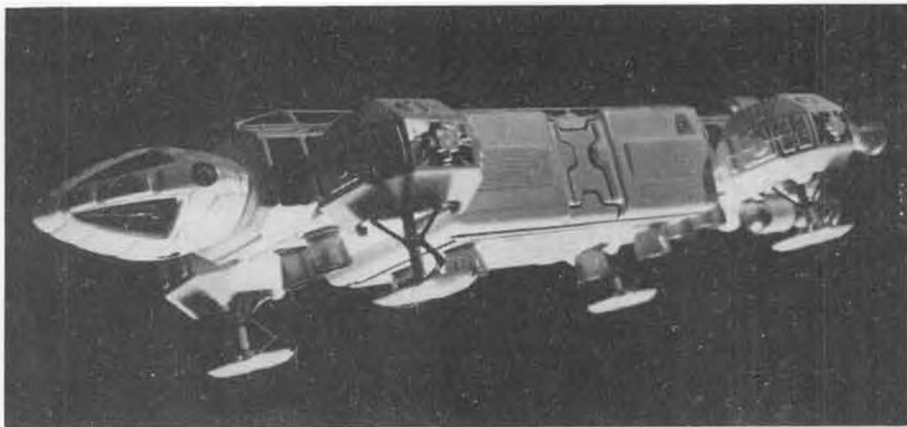
Brian Johnson (left) and Nick Alder, with various Eagles used for "Space: 1999". Photo copyright A.T.V. Licensing, Ltd.

evening's symposium, we present a report on a truly unique rocket kit, the Eagle Transporter from Centuri Engineering. Those who have seen "Space: 1999" (and who hasn't?) are familiar with the Eagle as the workhorse of Moonbase Alpha. Its modular design allows it to be adapted to many different uses and it is easily repaired; in fact, Moonbase Alpha can completely build new fleets of Eagles using Lunar materials. Eagles can be equipped as transports, freighters, fighting craft, and remotely-piloted drones. Aesthetically speaking, the Eagle is a beautiful bird; its lizard-like form makes it appear appropriately futuristic and other-worldly. The Eagle was designed, I have learned, by Brian Johnson, Special Effects Director for the show; and the first time I saw one, I wondered how I could make one fly with rocket engines.

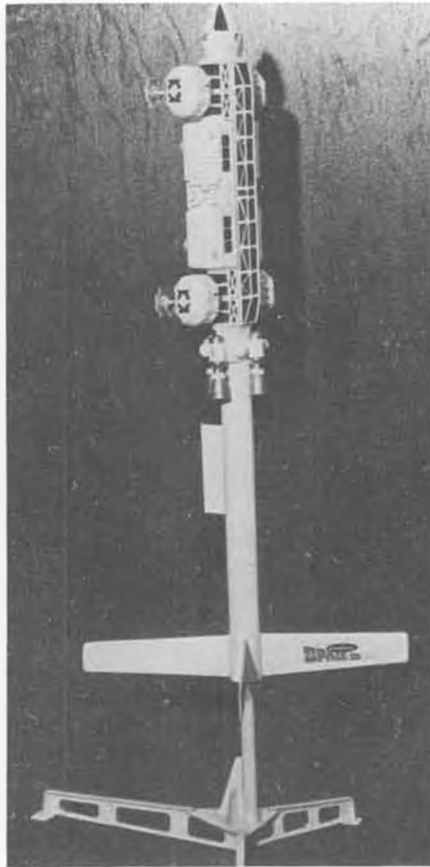
Centuri beat me to it. The Centuri kit is an excellent piece of work; very well detailed, and easy for the beginner to build, since it's entirely blow-moulded plastic. I was about two weeks into my Eagle when Grant Boyd of Centuri gleefully informed me that theirs was ready to be released on the market; I promptly abandoned my model and set about assessing theirs.

I had obtained some excellent views of the Eagle from Robert Mandell, of Independent Television Corporation. I am reprinting them here, so please don't deluge those kind folks at ITC with picture requests; I'm not holding back a thing. Anyway, while examining the Centuri model, I noted the most obvious variation from scale, the absence of the landing legs. This modification was made to keep the kit simple, since the rationale behind it was to attract "Space: 1999" fans to the hobby. I promptly built and tested two models, including the landing legs and other scale modifications which I will now pass along to you.

Follow the Centuri directions concerning initial construction. Use a good No. 11 type blade to work off the flash on all of the plastic parts, and supplement your efforts with a strip of light sandpaper (like 600 grit) on a contour sander or small sanding block. Good attention to this detail will result in pleasing results when you paint. The hull can get thin along the sides, so be careful along the mold break line. Score and separate the nozzles and tanks from their little sticks, then sand the cut areas smooth. Sand the nozzles by rubbing them against a sanding block with a circular motion, then lightly working off the burr. At this point I must deliver an unabashed plug for two products: the Uber Skiver knives, and Carl Goldberg's "Jet" cyanoacrylate glue. The fact that I could keep a good edge on my Uber Skiver with a few swipes at a hard stone made a big difference, and thanks to the blade



The Centuri Eagle kit, with modifications by the author, as explained in the text. Photo by Craig Kuhn.



The Eagle in flight readiness. Parachutes and engine are in the rear tube. Craig Kuhn photo.

chuck in the little things, there's just no way that the blade can work loose and twist, a sure cause of disaster when working plastic. As for the "Jet", there's no better way to get your mistakes glued back in place (blush), since they can immediately be lightly sanded to make them almost disappear.

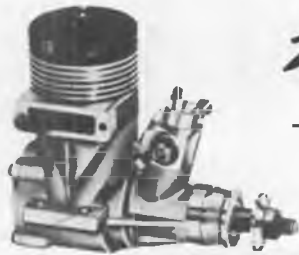
The bottoms of the side pods serve as the landing leg pads. Score carefully and remove each of the four cross-shaped pads. Dress all cut edges with that light sandpaper. Watch the corners; it's easy to get too anxious and let the knife blade hog into the plastic. "Jet" helps a lot here. Trim and sand flat the flash around the blow moulding hole, which is located in the middle of the four jets on the outside of each pod. These holes

are filled in with body putty, pressed out from the inside with a damp finger, so the putty sticks to the plastic and not the finger. Let it bulge through the hole and sand it flat when it dries.

If the plastic thins out along the top of the pod, fill in the little bumps with white or aliphatic resin glue. Titebond works well, and I came across some super-thick white glue during a foray into a craft store, called, of all things, "Tube O'Tacky". It works very well. See what you can get by paying attention to other people's hobbies?

Four reinforcement plates must be cut from 1/8 inch ply or hard balsa. These fit in the top of each pod against the plastic, and measure about 20 x 18 mm (Think metric!). Sand the corners round, and affix the plates inside each pod with a generous shot of the above-mentioned white glue. It'll fill in those bumps on top of the pod. Now four lower strut plates must be cut, which measure about 15 x 25mm. These are also sanded to fit; cut them slightly large and trim as you test-fit. They are glued along the bottom of the pod, making contact with the pod just inside two cut edges, running lengthwise. Grab each plate with a pair of tweezers and place it in the pod, working from underneath, so that the long ends rest on the plastic near the cut edges, and "Jet" the plate in place. Once the "Jet" takes hold, reinforce the glue joint with tube-type plastic cement to build up a fillet. Repeat with the other three pods.

Once the plastic cement is dry, mark the center of each lower support plate by drawing an X, with the lines starting at each corner of the plastic. Drill a 1/8 inch hole at the point where the lines cross, to accommodate the landing leg. The legs are made from 1/8 inch dowel, 5 centimeters (well, two inches, if you insist) long. Put a drop of white glue on the top of the leg, and push it through the hole until it touches the upper support plate. Now eyeball the pod from all four directions to be certain that you have the leg perfectly vertical. Once you're sure, apply glue around the hole in the lower support plate to form a



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fillet.

The plastic pieces that you cut out of the bottom of the pods have to be filled in to make them level. I did it with a couple of layers of that thick white "Tube O'Tacky" stuff. Do it in layers; it'll dry faster.

The main hull should now have the nozzles and tanks attached ("Jet" is recommended for this, but get 'em on right!). Spray the main hull flat white, and spray the pods too, holding them by the landing legs, which you can touch up later. Give it two light coats, paying attention to how well the areas where you sanded off flash get covered up. Once this is dry, you can take a small brush and some flat black paint and simulate the strut work along the top and sides, if you wish. Refer to details in the accompanying photographs. An India ink ruling pen will prove very helpful, especially along the top. Touch up your mistakes (please make some mistakes!) with flat white.

Now it's time to glue the pods onto the main hull. Scrape the paint away from the areas on the hull and the pod where the glue will make contact. You can use tube-type plastic cement or "Jet" to affix the pods; I've had good results with both. Check the model for straightness by placing it on a level tabletop. If it wobbles, sand a bit off

the bottom of a landing leg or two. It's important to get the thing level before gluing on the landing pads.

If the glue is dry inside the landing pads, position all four under the landing legs on that flat table top. Eyeball the model from all sides to be certain that the pads are level and aligned properly. "Jet" them in place without moving them, cautiously checking that alignment as you go. Once tacked in place, fillet them with a small amount of white glue.

The details shown in the photos around the base of the landing legs are cut from card stock. Hold in place with tweezers and apply "Jet". There are four struts emerging from the bottom of the pods, attached to the middle of each leg. These are easily made from flat toothpicks. Finally, an elbow-shaped strut extends from the top of the landing pad to halfway up the leg; this is also fashioned from two flat pieces of toothpick. Brush paint the whole deal with flat white when dry.

Apply the decals as per instructions. Your friendly neighborhood Uber Skiver will be of substantial assistance in getting the cross-shaped decals around the jets on the side pods; slit the decals at the corners and press them firmly in place. The circular "light" decals that go on the edges of the forward module will have to

be slit to conform to the curved surface. Make sure that they're firmly down.

Flight instructions are simple, and completely laid out in the directions. You'll find the Eagle an extremely stable bird, slow on the takeoff. Be careful not to tangle the parachute lines when packing the chutes. I haven't had the chance to fly it with a Super C yet, but the garden-variety C6 gives it a good ride, so the Super C should be even better. An all-around good effort, this kit. And you'll love the incredulous questions you get from spectators: "That flies? Are you serious?"

In this month's Howzat-Grabya Department, I have a Momentous Announcement, which came in while I was typing this article. The final site selection for NARAM-19 has been made. The Nationals will be held in Kansas City, Missouri, and your humble correspondent has been appointed Contest Director. No kidding! The host Section is the Spacemodeling Society of Kansas City, and the flying site will be the grounds of Johnson County Community College. Most of the plans are nearing completion, and it looks very encouraging. For one thing, we have arranged to have a computer out on the field during the flying, to provide real-time reduction of tracking data. Watch MB for more details as they solidify; next month I'll present a complete list of events. Okay, all of you West Coast people who complain (rightfully) about all the big events being held in the East; the official slogan of NARAM-19 is "We'll meet you Halfway!" ●

**Arpiem . . . . . Continued from page 15**

1/4 x 1/4 balsa, wrap front and rear wire in place with carpet thread, adjust for neutral, then HotStuff rods permanently. The rear rods could be brought out under the stab, but would require bending; as drawn the rods have a straight shot. Cut 3/32 sheet to clear a straight shot. Cut 3/32 sheet to clear with no binds anywhere in the hook-up. I put the switch on the side opposite the exhaust mounting, on a ply scrap in 3/16 infill. If you prefer an internal switch, there's plenty of room.

Disassemble everything, go over all surfaces with 220 sandpaper, and cover. The windscreen and windows can be Hot Stuffed, cemented, or held with vinyl trim tape. Any scratches can be polished out with toothpaste (fluorides not needed here).

Put all the hardware together, recheck radio functions get motor needled, recheck CG (ballasting if necessary), steam out any severe warps, and go fly this cutie.

R.O.G. with initial down elevator, feeding in up as speed increases. This model will jump off the ground, so don't use a bunch of up. Hand launching is a breeze, just pick her up under the wing,

# CARL GOLDBERG

## KLETT

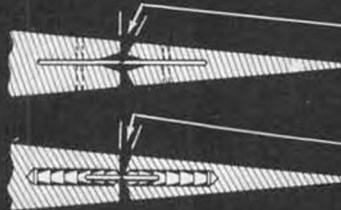
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RK5 18 for \$1.20



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The new Flex-Point hinge, with the round barbs extending close to the center of the hinge, will permit the hinge to flex only at the hinge line where it is supposed to flex.

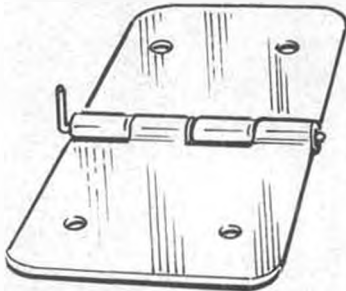
MADE FROM VIRGIN POLYPROPYLENE—The "Living Hinge" Plastic



actual size



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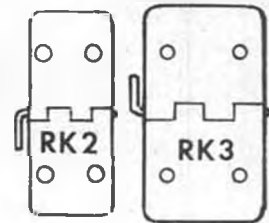
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RK2 needs only a knife slit to install—it's so thin.

RK3 can be installed with the CG hinge slotting kit.

actual size



RK2-7 Small ..... 7 for \$1.10  
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RK3-7 Regular ..... 7 for \$1.25  
RK3-15 Regular ..... 15 for \$2.35

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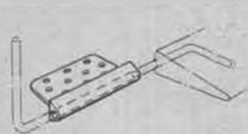
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For #10 Nylon Screws SD2—98¢

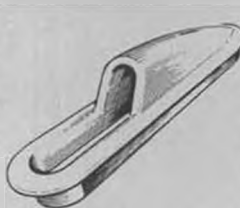
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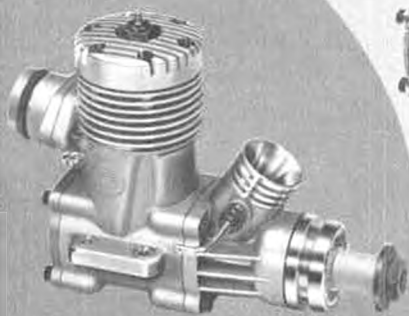
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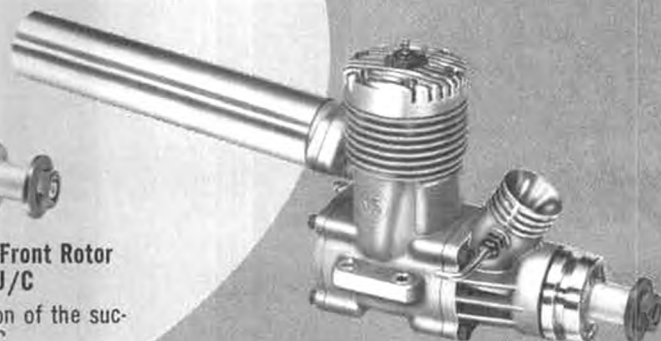
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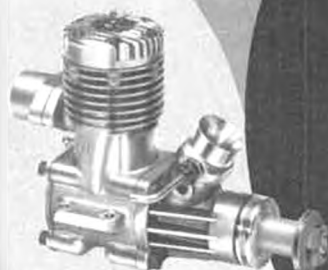
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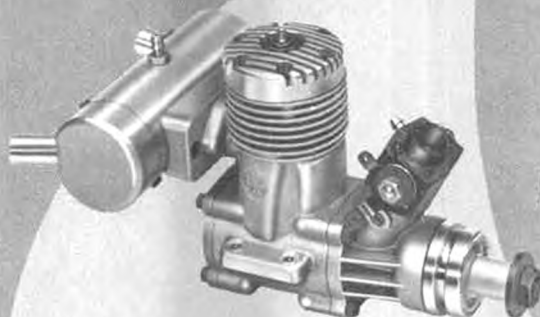
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take two or three steps forward and let go, do not toss. Landings are super-simple, just keep the nose in the wind and flair out at touchdown. I used a steerable tail wheel, but it was a waste of time, the tail won't stay on the ground long enough to get any steering effect.

It would be redundant to describe thermal hunting with this model, read my "Kloud King" article in another magazine, if your interested. I'll just make one comment here . . . the radio is more useful getting out of lift and back up-wind than for finding lift. The airplane will center up in the thermal without anyone's help. You'll have a ball with MISS APRIEM, whoever she is.

. . . But what does the name mean?

(OK, since you ask. Back in circa 1938, Brown Jr. Motors published about four issues of a little hints-and-kinks newsletter, and named it ARPIEM, which, as most anyone can see, is one way of spelling a word that sounds like the initials for Revolutions Per Minute. Several gas model plans were published in the newsletter, including this one, which Steve Kowalik designed and appropriately named.

About that relationship with Steve, which Dee mentioned earlier. Though we met many modelers way down the line in our modeling career, Steve Kowalik was probably the one who did the most in getting us really started in the hobby.

Going back to pre-depression days, Mullins & Sons, a large men's and boys' clothing store in Wilmington, Delaware, had a sort of "playground" on the third floor . . . a place for young kids to play on swings, see-saws, and push-em-yourself merry-go-rounds while the parents shopped. This had been a favorite spot for this writer in his single-digit years of age.

Around 1932 or 1933, the store installed a model airplane shop adjacent to the "playground". It occupied a large area at one end of the third floor, with a fairly long counter, backed by high shelves for the various lines of kits. Over to one side were old-fashioned (well, not then) glass-covered clothing display cases, filled with solid and built-up scale models. We can still picture those intricately detailed and many-colored scale ships, mostly built from Cleveland and Peerless kits, that held us entranced for hours at a time . . . just looking in wonderment . . .

It was here that we saw our first microfilm model . . . "My gosh, is that covered with cellophane?" It was here that we bought and built Megow's first flying model, the "Parlor Fly." It was here that we watched a fellow hand-wind his Cleveland Boeing 95 Mailplane (you bet it was a biplane!) with the hardwood hubbed, fiber bladed prop. He set it on top of one of the display cases and two or three fellow modelers

stood by about 20 feet away to catch it as he released it for one beautiful and realistic takeoff after another . . . to be caught by one of his helpers. And it was here that we saw and heard our first gas model engine . . . a Brown, of course.

Steve Kowalik operated the hobby shop. It might have been his store, or maybe Mullins', we don't know. However, it was Steve who helped us with the Parlor Fly, who explained about microfilm, who allowed us to watch and occasionally help with the construction of some of his models, and who had the audacity to crank up that Brown inside the store!

We'll stop here, because the flash-backs are coming so thick and fast that we could fill up the whole issue with memories. wcn)

Plug Sparks . . . Continued from page 23

designed (according to the brochure) to run as well on the hundredth hour of operation as it did on the first!

Of course, this was based on the premise the engine would be kept clean. To help this problem, the Elf engines were equipped with a filter to remove dust and prevent dirt from getting into the engine. In addition, because of the number of cylinders, vibration was considerably reduced, with consequent smoother running and lower wear. One

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of the other claims made by the manufacturer was the ability to run cooler. For this reason, Calkin recommended nothing heavier than SAE 40 oil. This, of course, gave the economy claimed.

The Elf Four, as marketed by Calkin, sold for \$64.50, complete with coil, condenser, and brackets. The engine was guaranteed to give satisfactory performance in every way. Don't you wish you could catch today's manufacturers doing that!

For the technically minded, the Elf Four displaced .396 cu. in. (double of the twin at .198), bore 15/32, stroke, 9/16, all pistons made of forged aluminum, with aluminum cylinders and crankcases. The Model 40 (as it was called) weighed approximately 10 ounces bare. Flying weight, with coil and condenser, propeller, etc., ran close to 14 ounces, a fairly heavy weight for a small Class C engine. (Brown Jr. weighed only 6 ounces bare). The price was another reason for limited sales, as this type of engine only appealed to the specialty modeler.

**LAS VEGAS SAM CHAMPS**

Al Hellman, SAM Champs Contest Manager, informs this columnist that most of the initial 100 room reservations at the Stardust Hotel & Casino are gone. The ante has been raised to 150 rooms,

so don't delay if you haven't made your reservation.

Interestingly enough, over 60% of the reservations have come from the East. This meet promises to be a real whing-dinger. To get rooms (at \$18.50/night) write to Al Hellman, 22607 Hatteras, Woodland Hills, CA 91364 enclosing a deposit of \$10.00 for each double bed room required.

For those who feel the Stardust is a little expensive (it is 26 to 28 dollars if you are not on the rate), Hellman states the Stardust Camperland costs \$5.50 per night. For those wishing lower cost accommodations, like Motel 6, Kings 8, etc., write to Al for addresses and brochures.

The Annual "Bean Feed" will not be a bean feed per se, but will instead, be a buffet supper costing \$2.50 per person. This will cover a menu consisting of hamburgers, salad, beans (yes beans!) punch, and coffee. There will be a no-host bar available in the room for those who love their libations.

The Annual Bean Feed will also serve as the vehicle for all final announcements regarding the contest events, regulations, and times. We are also expecting such modeling luminaries as Lanzo, Konefes, etc., to make an appearance. This one is going to be the greatest!

Incidentally, for the benefit of you wolves who have been licking your chops at the photos of Tricia Webster, Miss SAM Champs 1977, Al Hellman has appointed that swinging bachelor, Phil McCary, to be the official squire of Miss SAM Champs. As Allstate puts it, "She'll be in good hands". Haw!

**M.E.C.A. NATIONAL  
COLLECTOGETHER**

After considerable correspondence with Hank Hilscher, the head man of the Model Engine Collectors Association, a telephone conversation disclosed that the Annual MECA Collectogether will be held on Monday, June 27 beginning in the morning and lasting into the evening, during the Las Vegas SAM Champs.

This arrangement has come about because of some complaints voiced at the 1975 Denver SAM Champs where the annual "Bean Feed" was held in the same room. Although it was late in the afternoon, some collectors felt they had been cut short in their time to trade.

This year, a special room has been set aside in the Stardust Hotel and Casino. This announcement is also being carried in the MECA Journal. At present, plans for a MECA Business Meeting followed by a Banquet on June 26 is still nebulous. A questionnaire is being circulated to find how much interest there is in this portion of the Collectogether.

So, if you want to see, talk about, or acquire engines, come to Las Vegas!  
**SECOND OLD TIMER BASH**

Well, it's close to spring again, with the attendant seasonal madness, and Joe Beshar is no exception. The Second Experimental meet for trial of revised "Beshar" rules has been scheduled for May 15 from 9 am to 4 pm at Lakehurst Naval Air Station. Three events, Class A, B, and C, will be held, with prizes sponsored by Hi-Way Hobby of Ramsey, NJ.

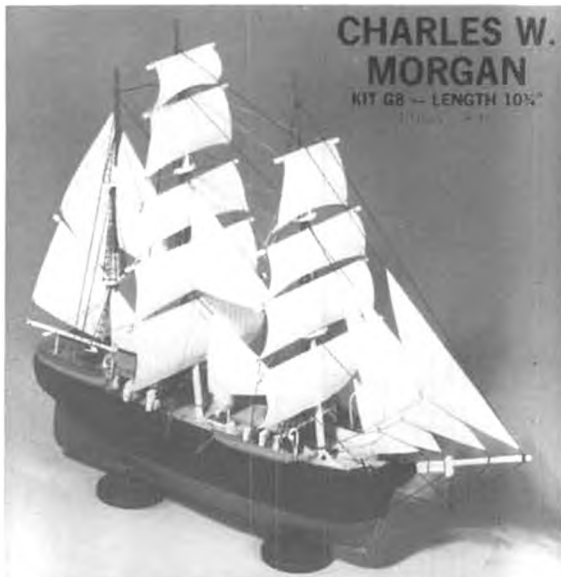
Billed as "true R/C assist free flight meet", a notable deviation this time is the permitting of downthrust (haw!) However, the transmitter clamps which permits the pilot to put in elevator down-trim did this same thing last year.

The interesting thing in this meet is the free flight portion of each flight after the motor is turned off. As long as a hands-off attitude is maintained on the transmitter, the official flight time keeps running. This gets to be a strictly "guts" contest. How long can you let your model drift away before you panic and have to get it back to the field to make the flight count? Let's hope for better weather this time, with a resulting better entry list.

**ANYONE CAN WIN CONTEST**

Tom Schoen, proprietor of that well known M-N-M Hobby Shop in the Chicago suburbs, relates the latest gimmick in old timer R/C assist flying that really puts the fun into the hobby. Best part about this type of event/

# THE TALL SHIPS ARE COMING!



**CHARLES W. MORGAN**  
KIT G8 — LENGTH 10 1/2"

## THEY'RE EASY TO BUILD

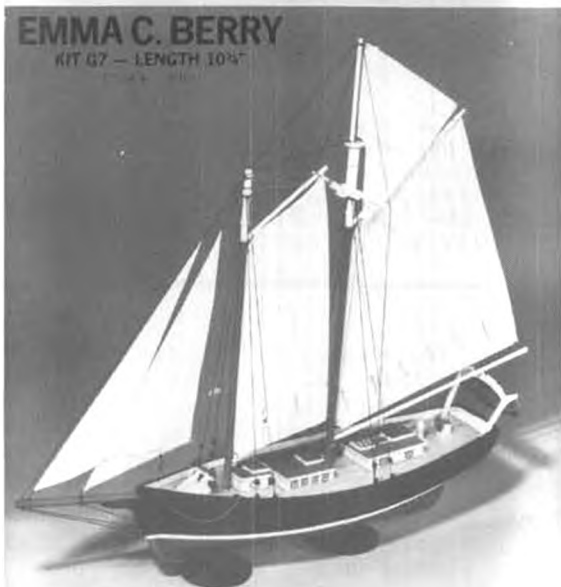
We know it seems unbelievable, but it's true. New techniques in the heretofore difficult rigging installation and ratline making, are simplified so that almost anyone can produce a craftsman-like job. Density selected prime balsa wood is a real pleasure to work with, and the step-by-step plan is clear, simple and complete.

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## THEY'RE COMPLETE\*

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\*Dry Kits paint and cement not included



**EMMA C. BERRY**  
KIT G7 — LENGTH 10 1/2"

## THEY'RE HISTORIC

Sailing out of her home Port of New Bedford Mass., the square rigger Charles W. Morgan sailed further and killed & processed more Whales than any other Whaling Ships of her time. Today it is for ever enshrined in all its glory at Mystic Seaport Conn., were it can be boarded and its history relived. The Emma C. Berry is one of the oldest commercial sailing ships in American Documentation. Preserved in excellent condition it can be visited and enjoyed at Mystic Seaport Conn. Emma was launched in June 1866, Slooped Rigged. Further details can be obtained from Mystic. Originally the U.S.C.G. Sailing Bark Eagle was built for the German Navy. It was acquired by the U.S. Coast Guard in 1946 and has been used as a training ship since then for Future Officers; Carrying 200 cadets. For further details write to the U.S. Coast Guard.

- **CLOTH SAILS**

- **CAST METAL FITTINGS, ETC.**



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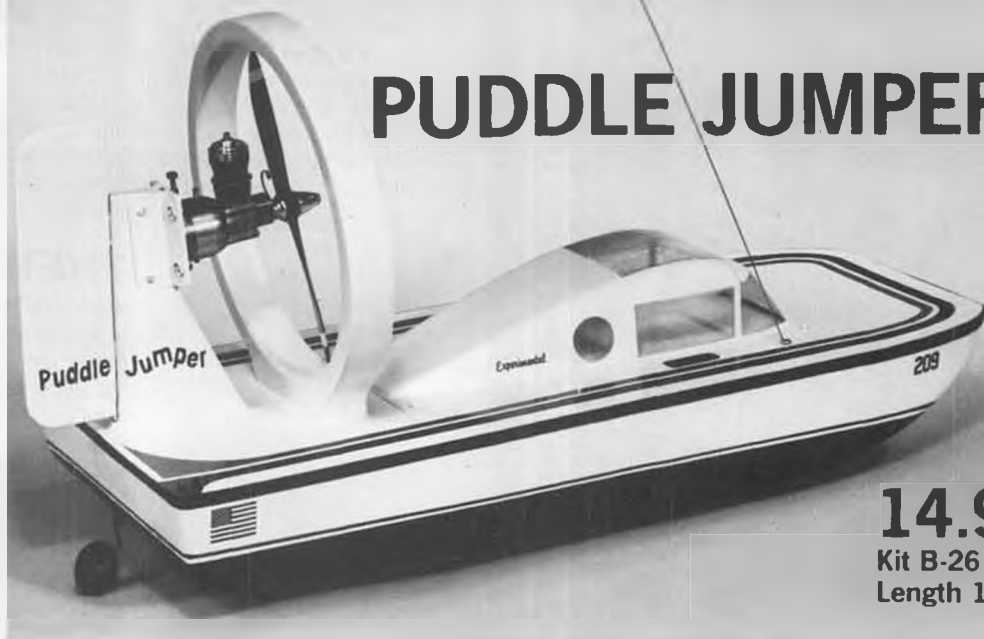
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contest is that the race is not always to the swift. Anyone has a good chance of winning!

In the event that Tom Schoen stages in conjunction with the Chicago Aeronuts, there is no limited engine run. You can climb as high as you desire, but when you kill your motor you then select one of three cards. The cards are marked 2, 3, and 5 minutes. This is the duration you must attain for score. In addition, there is a bonus for landing in a designated circle. Although there is no penalty for overflying the time, there is always the problem of trying to guess the altitude you need.

A little more fun could be introduced by penalizing the contestant for every second over required time. That would fix the high flying sandbaggers!  
XP-3 REVISITED

Robert Perry Smith, who has finally passed his bar exams in Colorado, writes to say the recent article on Ben Shershaw's XP-3 stirred up fond memories.

Back in the winter of 1942, a friend of mine, Fred Geng of East Orange, New Jersey, completed an RC-1, which Bob seems to regard as the kit version of the XP-3, both being designed by Ben Shershaw. Inasmuch as the ship was completed in mid-winter, the problem of where to test it arose. Someone suggested using one of the frozen lakes in Northern New Jersey, so off they went

to Lake Hopatcong (sound familiar?)

Four showed up, Smith, Geng, Greg Higgins and Ben Shershaw. The lake was frozen solid and naturally, very slippery. None came prepared with ice skates. The problem was how to run fast enough on the ice to hand launch it for a test glide. Running was impossible, but luckily a spectator, equipped with skates, offered to push it until it began to fly. After several "skate-bys", Ben Shershaw allowed that the stabilizer needed 1/16 incidence. This was set in, the Super Cyclone fired up, and they let'er go! While the first flight was far from perfect, the model flew just fine. Being strictly free flight, this was simply great. Smith, regretfully, has no more history on the RC-1 prototype but the foregoing is of great interest. Maybe someone knows what eventually happened to the first RC-1.

SAM 21/27 DOINGS

SAM 27, a schism of SAM 21, has again been quite active in staging contests at Santa Rosa. In spite of the overcast, lift was quite good as Bekins put in three straight maxes to win the Limited Engine Event. Not content with that, he then proceeded to clean house in Texaco with his Spitfire-powered Lanzo with the good time of 18 minutes. Bekins proved he is human after all as he dorked his hot .020 Playboy and only placed second.

Rough!

The preceding meet staged by SAM 21 in January at Santa Teresa saw the columnist ruin three models. While gambling on a thermal at the end of the field with his Lanzo stick, a gust of wind blew the Playboy over (faced downwind too!) and broke the wing. Just about this time, the Lanzo ran out of altitude, plunging into some rather stout pine trees. Goodbye wing! Not content with that, while sitting on two maxes, promptly ran out of battery in his .020 R/C Viking and fixed that one in a very professional manner. That guy Pond is getting hard to beat for the crackup award of the day!

Of course, Bob Von Konsky won this meet, using the same combination as Bekins, an Anderson Spitfire in a Lanzo. A tough combination to beat. Bob, incidentally, showed up late, having submitted to his wife's wishes to go to church. This caused many of the contestants to wonder if it wouldn't be better to go to church, then show up late, and win all the prizes! One thing for sure, the Good Lord took a liking to Bob!

Probably the saddest guy on the field was Tom Bristol, who found, after retrieving Pond's Lanzo stick out of the tree-studded gully, that the valley was loaded with poison oak! And poor Tom is one of those guys who only has to stand near poison oak and he gets a bad

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case! And he got it in the worst place too!

Latest info from Ed Wood, organizer of SAM 27 in Santa Rosa, is that he is how moving to Sacramento. We expect Ed to organize a SAM Chapter up there too! Looks like the writer's fond dream of a round-robin schedule is shaping up to a reality!

### CANADIAN CAPERS

Ray Hutchinson, of Edmonton, Alberta, Canada, reports there is a considerable amount of old timer activity in his area, both free flight and F/F R/C Assist. Ray is presently completing a KG (with Kraft radio) to compete against a New Ruler and Super Buccaneer. These are only the ones that he knows of!

In addition, the Edmonton Aeronauts have put up a beautiful perpetual trophy for the best .020 O/T replica in free flight. This trophy has aroused a terrific amount of interest in this popular event. With plenty of good free flight sites available in this area, old timers will thrive and thrive! (Try the KAMLOOPS Annual Fly-In in May. Everybody is coming!)

### FREE PLUG DEPT.

Received an advertising sheet from Ron Weiss of 11 Bialla Place, Hailsite, Long Island, NY 11743, announcing a new strong light-weight fabric covering. Called "BMC", Ron claims this is the best covering for any medium size

aircraft, and up to 9 ft. wingspan types.

The material is doped tight like silk and exhibits no sag in temperature changes. BMC comes in red, white, blue, orange, and yellow, at \$3.50 for 36" x 44". If longer lengths are desired, 10 ft. lengths can be provided. Try it, you may like it!

### SHIELDED IGNITION NOTES

In the MB article by Tom Bristol on shielded ignition and the follow-on article for preventing battery shorts across the closed points, Tom has been asked what he uses for taping up the Shielded box where all the electrical components (coil, condenser, batteries), are housed.

Tom recommends the use of 3M aluminum tape with adhesive backing. Best size is 3/4 inch wide, Type 425. Don't say we didn't tell ya!

### THE GOOD WORD

The best way to wrap up this column is to quote a letter by Charles Hampson Grant (former Editor of Model Airplane News and in great shape at 80) to Tom Mahon, who had sent him a photo of his excellently built KG-2. I quote, "Your plane is beautifully reproduced and constructed. I trust it will continue to behave and serve you faithfully. 'Nature' directed me in designing the X-8 airfoil of the K-G. It has proved to be remarkable for 'low sinking velocity'.

"I have often wondered why the soaring boys have not used it on their

gliders. Contrary to their belief, a strong down-wash is not necessary for good gliding. A slight *reverse curve* at the trailing edge of the wing is much better for wing efficiency. (Birds have *this* in flight, i.e., reverse curve). Apparently our 'smart boys' have not been close enough to nature to observe this.

"I'll tell you a secret. I didn't calculate the X-8 or any of my airfoils. I caught a *trout*, curved it slightly, and traced its curved outline. Why? Well, a trout is one of the fastest, most efficient fish there is, and I figured that God or 'nature' knew more than I or the so-called smart 'book boys' with all their degrees for memorizing what some humble person had figured out with a combination of thinking and *demonstration in practice*. So many planes are disappointments today because they are 'complications', not 'inventions'."

On that note, we'll say amen, and old timers forever! ●

Megow . . . . . *Continued from page 47*

ducing modern production techniques, the manufacturing operation was re-organized from a job shop to a mass production factory with the third floor laid out with conveyor belts to facilitate the assembly of kits in large quantities.

Most assembly work was done by women. Among the specialized machines were an automatic printing press for

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up to 11 x 17 inch plans (larger sizes were contracted); three manually operated presses for balsa printwood, with a fourth for die-cut wood. These machines were also used for other printing chores when the need arose. The factory also numbered two machines for putting model cement into tubes and bottles. However, the practice of including cement in kits was discontinued due to evaporation and resulting consumer displeasure.

Having now set the scene, let us follow a Megow model from origin through production. Firstly, the company was always alert to suggestion. Salesmen furnished most of the input, but magazines and competitor efforts were also carefully monitored. After due consideration of a proposed type, the engineering department would be assigned to work up a master plan. From this, an example or two would be built and appropriately tested for appearance, performance, ease of building, etc. If all was adjudged satisfactory, plates for the printwood would be produced. Then, large numbers of plans, printwood and boxes would be printed, strips cut, nose blocks turned, etc. Each kit component as produced was sorted in a separate, assigned area within the stock room area called "Goods in Process." There they would remain until the day when a "run" of a particular kit was to be made. At that time, all

components of that kit would arrive at its respective place on the assembly line and be continually resupplied until that run ended. All activity on the typical assembly line run followed a similar pattern. First, a girl would place down a plan. That plan, lying flat on the conveyor belt, then moved to the girl at the next station. She placed tissue paper covering on the plan, then in order of placement, came printwood, strips, wheels, turned nose block, prop, thrust button, music wire prop shaft, rubber and printed insignia sheet (if needed). At this time, the conveyor end was approaching, hence, the plans were folded around all components and everything was popped into the appropriate box. The completed kits were then placed in a larger shipping box and sent to storage.

The previous description gives no indication of the dazzling speed obtained in a run when peak effort was required. The following per day production figures bear testimony to the efficiency of the Megow operation:

10¢ Kits— up to 40,000 per day  
25¢ Kits— up to 25,000 per day  
50¢ Kits— up to 10,000 per day  
\$1.00 Kits— up to 1,000 per day

To produce this quantity of model airplane kits, a large and dependable supply of balsa wood was necessary. To assure its continuous availability in the huge quantities needed, Megow

hired his own man in Ecuador, South America, to oversee the buying and shipping. All balsa was subsequently shipped directly to the port of Philadelphia and stored in a rented warehouse until needed. Also needed in large quantities were wheels, thrust buttons and propellers. While wheels and thrust buttons were obtained through outside vendors, props were produced in a more homespun manner. Fred broached the subject of manufacturing propellers to his father, who promptly enlisted another son, George, into the project. Being an electrical engineer, George applied his learned skills in designing and building a machine to cut out props. From Spring 1935 on, the elder Megow furnished propellers to the company totalling millions of rough sawn props over the years.

By 1937, the company advertised itself as "Megow", the previously attached "Model Airplane Shop" having been dropped altogether. The name was firmly established in the minds of nearly every American boy, and interestingly enough, was generally mispronounced.

Although "MEE-GOW" was a household word, the proper pronunciation was "MAY-GO". Fred, however, could recognize a lost cause when he saw one, and submitted rather than engaging in the colossal "waste of time needed to correct everyone."

During this period of unabated growth, Megow re-entered the mail order business and published an annual catalog which listed kits and other model building accessories available through the company. In 1937, Fred was approached by the infant Strombecker Company. "Since they had a good line of models, we said we would put their stuff in our next catalog and sell it for them." "We did pretty good for them," Fred recalls. From catalogs, the history of adding new models and the dropping of unsuccessful ones can be documented. However, since kit additions were many and those dropped were few, the Megow catalogs displayed an increasing menu of items each year, indicative of sustained and expanding market success.

When gas powered models became the rage, Megow was at the forefront. As many companies began to manufacture engines, Megow could also offer one of their own. Fred remembers that Megow engines "were made in a garage. The machinery was all set up and parts for around 5,000 engines were worked up. When someone ordered an engine, we would assemble it from the stock of parts, test it, then mail it out. When the supply of parts was used, the engine was discontinued."

The Megow Company grew and prospered steadily, reaching its peak at the advent of U.S. involvement in the Second World War. At this time, Megow offerings outnumbered every competitive line. Seemingly, there was no upward limit to the progressive expansion of kits in production. Then, during 1942, the U.S. Navy diverted all balsa wood to the military, for use in life raft construction, thereby making it unavailable for civilian use. This unexpected restriction imposed a genuine hardship on the entire model business by forcing them to use materials such as pine and basswood, which were totally unsuited to flying models (*at least it seemed so in those days. wcn*) Consequently, Megow model production dwindled to a trickle, mostly 1:72 scale solid wood, identification type models used by the government. Model builder disen-

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chantment with these limited offerings, and kits comprised of dubious materials, made itself felt. By the latter part of the war, model sales had shrunk to virtually nothing. These circumstances, combined with retained interest in modeling itself, fostered the use of new materials which eventually evolved into the plastics-oriented model industry of today. During WWII, common with other companies, a large percentage of Megow effort was deflected to war production. In particular, Megow manufactured port-hole covers, heavy machinery parts mostly for capital ships, and utilized the old glue-tube filling machines

to fill vials for a G.I. anti-VD kit.

The highly restrictive war years and the business recession which soon followed, exacted their toll on Fred Megow. By 1948, with increased Federal interference in small business, tight money as well as numerous daily annoyances, Fred had enough and began liquidating. By 1949, Megow closed, with most stock purchased by the Comet Model Company.

Of the millions of kits manufactured under the Megow name, Fred kept not one. His memorabilia consists mainly of advertising clips (which Fred freely admits were compiled by friends,



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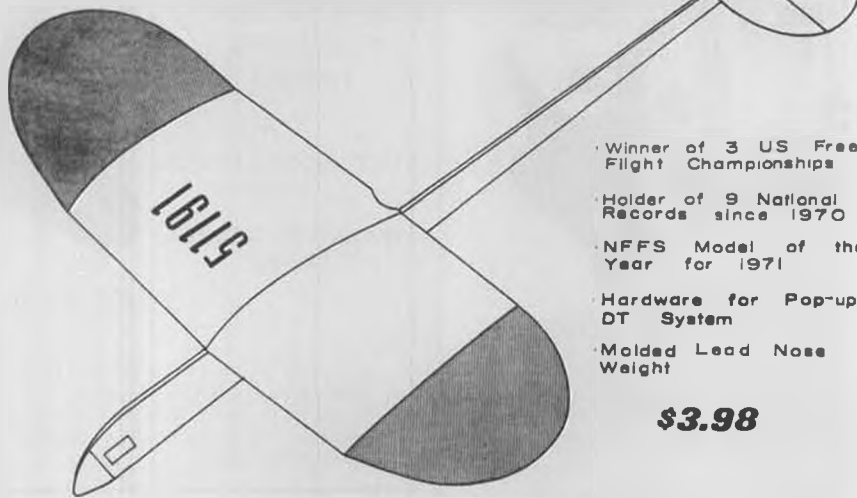
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or he wouldn't have those). However, although his legacy in material things is small, his contributions to model building are immeasurable. Prior to Megow, model building was an expensive activity, certainly beyond the financial reach of most boys. To his everlasting credit, Fred Megow brought modeling within the financial resources of everyone by adapting the techniques of mass production into the three main branches of modeling: airplanes, boats, and trains. In the final analysis, it should be recognized that Fred Megow laid the foundation for the modeling industry as it presently exists.

Today, Fred Megow resides just outside Orlando, Florida. Although presently recuperating from a serious recent illness, reports that he has passed on to that "Great Model Shop in the Sky" are greatly exaggerated. He has no connection with the model industry whatsoever, rather spending his time at his hobbies of genealogy and gardening. Regretfully, people have still not learned to pronounce his surname correctly.

The authors wish to express their appreciation to Fred Megow for furnishing the source material contained in this article.

(Unfortunately, we must now eat our

words in the next-to-last paragraph. Walt Grigg, co-author of this story, just called from Florida to report that Fred W. Megow passed away on Saturday, March 12. This makes us feel all the more fortunate that we were able to obtain and publish the story of his great contribution to our hobby. We were that close to missing it entirely. wcn) ●

### Shipyards . . . . .Continued from page 48

ducts, and still have a scale plan available for them now and then.

"I think the biggest handicap for the development of a large group of scale ship modelers is the absence of contests for static and operating scale ships. Until there is a strong contest organization, which may culminate in a contest similar to the Nationals for airplanes, interest will always be at a lower level than most other modeling groups.

"I think MB should be applauded for attempting to give us scale ship modelers a place where interest in our hobby can begin to grow."

Mark S. Pacholke  
Valparaiso, Ind.

\* \* \*

"I read your article in the Jan. issue of MB on model ships and am writing to say I'm very glad to hear that there is growing interest in model ship building.

"I've been in this hobby (along with others) for more years than I care to remember. I've built 5 or 6 Marine models, one Model Shipways, a couple of old Megow models, and a few scratch built. I also have a fair reference library on the subject. At present (the past year and a half) I am trying to make up working plans for the "USS Pennsylvania" the only 120 gun ship-of-the-line the U.S. ever built.

"If there is much response to your article and any clubs or exchange lists made up, I would like to have my name included. And would greatly like to hear about Mr. Insley's oven-fired clay technique for decorations, along with his sources of information that is mentioned.

"And while I am writing you I would like to tell you that I really enjoy your magazine. Keep up the good work."

Edward L. Deemer  
2311 Canby ST.  
Harrisburg, PA 17103

\* \* \*

"For many years now, U.S. ship model builders have needed a magazine to turn to for help. Your article is the first step Model Builder has taken to see if ship model building is alive.

"Mr. Carr's articles are nice, if you build yachts, etc. But we need plans, articles on how to Plank-on-Frame. The article on the Pea Pod was good but that was almost 4 years ago. We need a magazine we can trust will come out on time with articles like "How do you Make Deadeyes and Block of Oven-Fired Clay". We need to know about the model clubs and material by such groups as Evanston, Illinois' great club, "The Deadeyes".

"Hope you will find time to start a regular section with detailed articles of Stan Insley's ship model 'Shura Lee'."

L. W. Swift  
Champaign, Illinois

\* \* \*

"No ship model clubs? The best organization around is the Nautical Research Guild, 1743 Dana St., Crofton, MD 21114. A quarterly is published and dues are \$11.00. They have regional groups around the country with regular meetings. Another organization, based in Chicago but accepting out-of-area members, is "Deadeyes". Contact Andy Sullivan, Ships Unlimited, 1900 Central St., Evanston, IL 60201.

"The best magazine out is "Model Shipwright", an English quarterly published by Conway Maritime Press Ltd., 7 Nelson Road, Greenwich, London SE10. A subscription is \$18. They also have a number of modeling books.

"A recent magazine "Model Ships & Boats", started publication Sept. '76. Its publisher is located at 415 Lexington Avenue New York, NY 10017."

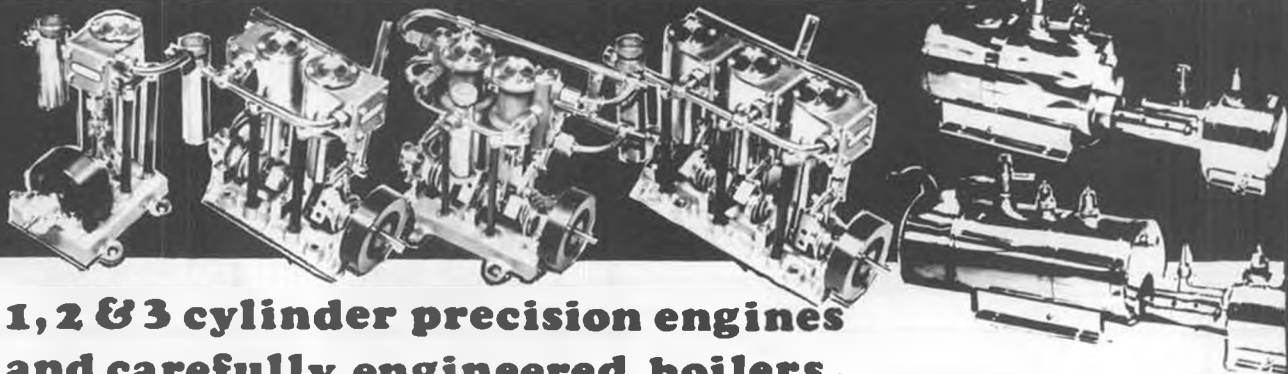
Robert Fabris  
San Jose, CA

\* \* \*

"Your article on scale model building is much needed. I discovered the very real lack of coverage of the subject back when I first started looking for information on building not only scale models but also models which can be converted to working models, both sail and steam.

"If you can publish the following information, either in the new products column or perhaps as an article following

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on the Model Ship Building, it would be a big service to the modelers in the immediate Boston area, and to modelers looking for resource material (i.e. help in building scale models).

"There is a very unique opportunity for the model builder, both the novice and the expert, in an 'open shop' run by Mr. Jean Deschenes of Ship Model Associates, 17 Meadowbrook Rd., Grafton, Mass. 01519. Jean is a professional, full time, model builder who builds all types of ship models. He also runs what appears to be the only model craft shop of its kind in New England. He conducts evening training sessions in the arts of ship modeling. For about \$70.00, you can sign up for six sessions during which you are given all necessary help. I am enclosing some photographs of students who had never carved a model, who took the sessions, and starting with a set of model lines and a block of wood, have now turned out two beautiful scale models. Another modeler not photographed is building a plank-on-frame model for the first time. Another part of the open shop concept is the possibility of obtaining help on a 'one time' or hourly basis, so if you are an experienced modeler who has become stuck on some detail, you can get assistance without having to sign up for the formal sessions. The sessions are open-ended, so if you start building a complex model requiring many sessions,

you may elect to continue until you have completed your project.

"Mr. Deschenes also will answer written inquiries for help on a "time-permitting" basis. Phone calls for answers to questions are not too popular since they interrupt his commercial model building schedule, but he will take time in between parts to write a quick note to those who correspond with him.

"Some of the men taking the sessions commute for over an hour drive each

way to get to his course, and all seem to be very pleased with the services offered.

Openings come up at random intervals as the models are completed, and new builders on the waiting list are contacted.

"I picked the two participants shown because neither had experience in model building and were as green a novice as one could find, and yet they have both turned out museum quality models. Barbara Fargo is shown carving the whaling schooner John R. Manta

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(3/16 = 1"). She started with gluing up stock, band-sawing to rough shape, and then carving the hull. Sandy Robins has just about finished a 3/4 inch scale, 22 inch model of a New Bedford whaleboat. Both these students were apprehensive about starting such detailed models because they had "never built" a model. I have seen students building models from little half model plaques to others over 48 inches in hull length.

"To further illustrate the degree of expertise and types of model construction one can obtain in this shop course, I asked Jean for permission to send you three photos of a working model he had just finished when I first

met him. This was an Eastern rig scalloper, measuring forty inches long (1/2 inch scale). Not only was the exterior detail exact, but also the interior of the model. The photos also offer a good example of the more difficult plank-on-frame construction.

"Please note the models shown were not built from kits. If you attend one of the open-shop sessions, you can use either a kit, or more often, you wish to build a model not available in a kit so you start with a set of plans and work up to a finished model.

"The photograph of the two-masted schooner is a finished model from another model builder. It's interesting to find several modelers building the same model without any of them knowing the other before selecting the model. Case in point is the schooner. This is a finished 3/16 scale John R. Manta (it has been on display at the New Bedford, Whaling Museum) built at the Deschenes shop. Barbara Fargo, shown carving her first model, is building the very same model. Unknown to Barbara, I also have been carving a 3/8 scale model for building a fiberglass mold. By mid-summer, the John R. Manta will be available as a fiberglass hull short-kit at 3/8 scale. First the 3/8 scale will be offered to display builders, then after testing, it may be offered as another radio control model kit.

"I just noticed that all I have mentioned so far is that the open-shop offers have been wood. Lest I mislead anyone, Jean Deschenes also finishes bare-fiberglass hulls with wood decks etc., and he also will help one learn to put together the fiberglass kit models, if so requested.

"Ship Model Associates is primarily a professional model building shop and so they do not generally advertise the availability of the model building courses. Jean Deschenes said he would welcome the exposure if you would be interested in making the course known through Model Builder.

"The only other building course I have seen coming close to this operation is the Small Boat Shop operated by the

Bath Museum in Maine, and that course is strictly full size small boats."

Dave Mainwaring  
Needham, Mass.

\* \* \*

Dave Mainwaring is one of our advertisers . . . see page 99 . . . whose scope of interest in model ship building was previously unknown to us. In addition to the above information about Jean Deschenes, Dave also sent us a list of model whaleship plans by Walter E. Channing, and a list of books on boat modeling.

The plans are mostly 3/16 inch scale and sell for \$8.50 per set. The books vary in price from \$2.95 to \$45 and cover model and full-scale ship construction. Plans are sold from stock, while books come from another supplier, but are sold by Dave. Send 50 cents for plans and book list, refundable with first order.

In a near-future issue, we will publish Robt. W. Eastwood's construction article for a 190 ft. river towboat "Patrick Calhoun, Jr." The model is 1/57 scale, making it 40 inches long, and is designed for electric power and radio control.

At this time, we extend an invitation to anyone who wishes to submit a construction article for a static or operational ship model, for possible publication in MB. Send us photos, description, and a print of the plans so we can determine the possibilities of publication and quote a price for the article. ●

**Power Boats . . . Continued from page 35**

WIND is the Schneurle ported OPS .40 marine version, complete with a muffled, tuned pipe. Bob Murphy, of Shamrock Competition Imports, is "The Source" for this very successful Italian product.

The OPS marine version comes complete with a flywheel and universal, 2 allen wrenches, R/C carburetor, cool clamp pressure fitting, instructions and maintenance booklet. You also get a muffled tuned pipe, and then you have

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The OPS has an ABC piston and sleeve, combined with the high performance effects of the Schneurle porting. There is an OPS engine suitable for almost every competition boat, whether hydro or mono. The OPS name is also very popular with the car and air boys.

The engine does not require any break-in, according to the instruction manual, and therefore may be installed directly into the boat. It is not necessary to break it in with an air prop at a rich setting. However, a *short* period of careful running is recommended.

The engine must be run-in at the rpms and temperatures of normal operation. The ABC piston and sleeve should not ever seize, but may become distorted from excessive heat caused by too lean a carburetor setting. Also, when running a tuned pipe set-up through an enclosed cowling, a certain amount of heat is transmitted from the pipe back into the engine. This can really cook a piston and sleeve. I would recommend that you use a water-cooled exhaust manifold to solve this problem. International Products makes an assorted selection of water-cooled exhaust manifolds for the OPS. Heat should not be a problem with your set-up in the NORTHWIND because of the open cockpit area.

Some of the features of the OPS are as follows:

1. The rear rotor disc is made from a phenol-fiber material rather than steel, for the good wear quality and light weight.

2. The strong crank case can be reversed for different exhausting possibilities. Screws for the front housing and back plate are the same size.

3. The R/C carburetor has a choke diameter of .355 I.D., which is as large as I recommend using on a .40. The carburetor is simple and strong, which is what a boater wants. It has a low-idle adjustment.

4. The flywheel is 1.7 inch diameter, tapering to 1.3 inch at the universal. It has a black oxide finish and weighs

approximately 3 oz.

5. Technical data: Stroke .691, bore .850, displacement .397, power 1.95 hp, at 26,000 rpm. Most boaters will run the engine between 18,000 and 21,000 rpm.

6. The tuned pipe seats snugly into the exhaust manifold via a silicone rubber O-ring.

When I mounted the engine in the boat, it was necessary to make an aluminum bracket which mounts to the transom to hold the tuned pipe in place. I used aluma-weld to attach a 1/8 inch thick piece of aluminum strip to the pipe at 90° from the mounting surface. This was drilled so that it could be bolted to the right-angle aluminum bracket. Make your bracket sturdy and you have an inexpensive way for mounting the tuned pipe.

### SUMMARY

Both the NORTHWIND and OPS .40 are outstanding R/C boating products. I only wish it was not the middle of the worst winter in Chicago history, so that I could give you some test-running recap. But take my word, I have seen these products put to the test. THEY ARE WINNERS!!!

### Products . . . . Continued from page 33

product line. The field charger kit is a must. This kit comes completely assembled, but if you so desire, you can paint or varnish it to suit your taste. I walnut-stained mine and finished it with two coats of varnish (which creates a very nice look). With this unit, you can charge your boat (aircraft or car) batteries in fifteen minutes. The only things you have to furnish for the field charger are the two 12-volt motorcycle batteries. There is room in the field charger for your transmitter and a few accessories. All charging chords and plugs are included and assembled. The charging panel is wired and all you have to do is attach the wires to the two 12-volt batteries. What could be simpler?

My Astro 25 marine motor was easily installed in the Spearfish with no modifications necessary. The electric

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motor was slipped into the existing engine mount.

The 12-volt battery charger, by Astro Flight, is made for charging your motorcycle batteries in the field charger. First insert the paralleling plug into the socket, hook up the charger to battery "B" and plug the charger into any 115 volt household outlet. You can then read the charge going into battery "A" on the ammeter. To charge your boat batteries, simply plug the charging chord into the socket of the field charger and the other end into the charging jack of the boat batteries. When you turn on the timer, you can see the charge going into your batteries. The instructions



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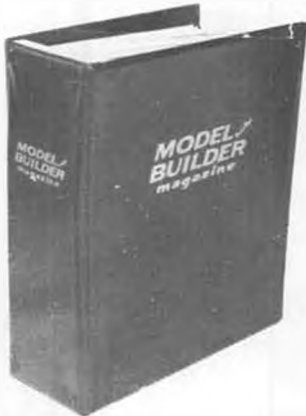
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that come with the field charger are complete, and following them will get you ready very quickly. Included are directions for trouble-shooting your system. I know you will enjoy your Astro Flight powered boat! For more information on its products, write to: Astro Flight, Inc., 13377 Beach Avenue, Venice, California 90291.

Electro Craft Systems, manufacturers of speed controls for race cars and boats, has a new electronic speed control for the Astro Flight 25 electric motor. This speed control will work with any motor up to 28 volts at 20 amps. At 16 amps

there is less than a 0.7 volt loss in the speed control. It will also withstand momentary short circuits. This new unit is very compact, measuring only two-and-three-quarters of an inch by one-and-one-half inches by three-quarters of an inch, which is just about the size of a servo. The unit was mounted in my radio box and hooked up according to the wiring diagram. I am not an electrician, so if I can hook up the control, motor, on/off switch, and reverse switch, then anyone can!

The diagrams are simple and easy to follow. When the control is mounted, just plug it into the receiver as you would the throttle servo. This electronic unit acts in the place of the servo. The unit I am using does not have reverse, so I used a servo coupled to a switch for reverse. A unit with forward/reverse is in the works, and will be out about the time this article is in print. This light-weight, compact unit, being completely electronic, has no moving parts. One thing to remember is to allow for cooling. In my installation, I made a coil of copper tubing and epoxied it to the heat sink. It was a simple matter to run plastic tubing from a water pick-up to the coil and out of the boat. The only suggestion here is to use an epoxy made for metal-to-metal bonding, and with a high metal filler content for good heat transfer. Devcon "Plastic Steel", or a similar product is recommended. For further information on the speed control, contact Electro Craft Systems at: 5111 Severance Drive, San Jose, California 95123.

To control the boat, I chose the EK Logictrol five-channel "Champion". In this particular case, I am only using three of the five channels, which are rudder, throttle and reverse. "Left/right" is hooked into the aileron plug, with "throttle" in its normal plug. "Reverse" is hooked into the retract gear position because the switch is conveniently located on top of the transmitter, in front of the throttle. This makes it handy to reverse with the middle finger of the left hand. If you so desire, you

can add other features, such as blowing a horn, pumping water, lighting lights, etc., with the other channels.

E.K. now produces a servo which will really be appreciated by all R/C modelers. This servo, called the "Maxi Mite", was checked by me against several popular servos, and it is the fastest and most powerful servo I know of. I have personally tested it in my O.P.S. .60 powered Crapshooter hydro (Model Airplane News, Nov. 1976, p. 47) and its power and speed does a fantastic job. I am using it in this electric boat because of its speed. When maneuvering, such as in docking and precision events, the instant response is an advantage. The Maxi Mite is a welcome addition to the R/C hobby in any installation, especially where power and/or speed is necessary. Some other uses would be on the large models now appearing, and for boats such as the .60 powered deep V's and hydros. Normal servos do not get the job done, and the E.K. Maxi Mite will. Use E.K. radios for all your R/C modeling needs and I know you will be pleased with the results. They are located at: 3322 Stovall St., Irving, TX 75061.

Hannan . . . . . Continued from page 50

"Spirit of St. Louis" Peanut models from the forthcoming Model Builder Proxy contest might well be put on display in the Air and Space Museum of the Smithsonian Institution, as part of the anniversary of Lindbergh's epic flight celebration. Consider the potential publicity for the modeling hobby if President Carter could be photographed holding one of THAT sort of Peanut! This may not be such a far-out notion at that, as several high-ranking Smithsonian officials are known to be very sympathetic toward the modeling hobby.

AND SPEAKING OF CELEBRITIES

The February 1977 issue of *World War I Aeroplanes*, edited by Leonard E. Opdyke, features some hitherto unpublished photographs showing Anthony Fokker with a model Dr. I

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triplane "dueling it out" with Bruno Loerzer, who is "hand-flying" a model D. VIII! These candid shots were processed by Reinier J. Meijer, of Holland. Incidentally, although the *WW I Aeroplane* is a publication aimed primarily at collectors and restorers of full-size aircraft, a forthcoming issue will be devoted to early model aircraft. Sending \$1.25 to 15 Crescent Road., Poughkeepsie, NY 12601, will bring you a sample copy of this very different sort of enthusiast's offering.

AND SPEAKING OF DR. IS

Florence Bakken sent in a place-mat from an eatery in Albany, Oregon, which features a Fokker Triplane sans horizontal tailplane, as its motif. Curiously, the name of the emporium is the "SWEPT WING RESTAURANT"! (Maybe Albany resident, Bob Stallck, borrowed the stab for one of his free flights. wcn)

MANUFACTURERS ATTENTION

We once conducted a "type preference" survey among over 100 active flying scale model builders, with the following results, in order of greatest interest:

1. World War One
2. Pre-World War One
3. Lightplanes
4. Fighters
5. Between-the-wars aircraft
6. Weirdies (unusual types)
7. Ultra-light planes
8. Homebuilts
9. Racers
10. Postwar

Such a survey can be misleading, of course, since it presents only information from people with a limited sphere of interest. By contrast, similar surveys among builders of plastic display models invariably place World War II aircraft in first place. Judging from contest participation, R/C "Standoff" modelers must feel similarly. Probably all surveys should be taken with a grain or two of salt, but they do offer interesting food for thought (and that's why they need the salt! wcn)

MR. "K" WRITES:

Joseph Kovel, the "K" of KG pioneer gas model fame, noting the loss of famed aviator Clarence Chamberlin, had this to say: "It is a sad moment when we realize that our boyhood heroes, forever young in our memories, grow old and pass away like ordinary mortals. C'est La Vie!"

THE CONTEST SCENE

The entire history of competition, be it horse racing, yachting, or model aircraft flying, has been beset by the problems of the win-at-any-cost competitor. Constant rewriting of the rules is the usual result, but the difficulties often remain. Latest "hobby" to feel the impact of professionalism is the "Pinewood Derby". Originally intended as a gravity-powered model racing car event for young boys, it has suffered from an excess of parental "assistance".

Some fathers went so far as to use electronic balancing of wheels, and aerospace bearing material and lubrication technology! In an attempt to restore sanity to the event, some contest directors have proposed an entirely separate class . . . limited to fathers. Doubtless the next wave of protests will be from the women's libbers. Pity!

CO<sub>2</sub> NEWS

According to a clipping from the "New Scientist", sent in by Joseph G. Carter, the TELCO carbon dioxide motors were developed as the result of the company's Chief Engineer being an avid scale model builder. The primary products of the firm had been electric motors, ticket issuing machines, and domestic appliances. The new CO<sub>2</sub> units have been selling beyond expectation in Britain and the U.S., and a pilot order has been received from Japan.

CROSSWINDS . . .

. . . is the name of the ambitious newsletter from the Cleveland Ohio Free Flight Society. Formerly edited by Russ Brown, this fine publication is now being produced by Dennis O. Norman, well-known to Model Builder readers as the designer of the "Peanut Spirit of St. Louis", and other models. Dennis has also been a participant in the MB postal Peanut contests. We have



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abstracted the following tidbits from CROSSWINDS:

"Definition: OLD LANG SINE '76 (A Scottish Trigonometric system for angles of incidents (sic) by rhythm)." . . . "FIKE and LACY are four letter words."

NEW PRODUCTS DEPARTMENT

Gene Thomas favored us with samples of his 1-1/2 inch scale plans for the Heath Super Parasol and the Church Midwing. Beautifully executed and printed on high-quality stock, these drawings are attractive enough to serve as wall decor. Featured is an unusual amount of detail, plus installation infor-

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mation for choice of rubber, electric, or gas power. Also available is proof-of-scale documentation, so necessary for competition flying. Details of these and other offerings may be obtained by sending a stamped, addressed envelope to Box 681, Melville, NY 11746.

Hi Fli "18" is the product of Union Stadt Zeppelin Works AKG, and represents a remarkable departure for a ready-to-fly rubber powered sport model. Constructed almost entirely of sheet balsa, including a rolled-tube type fuselage, the model is shipped in a large box, and requires only rubber-banding on of the wing and tail to prepare for flight. Details of this and other "Zeppelin" offerings are available from the manufacturers, at P.O. Box 467, Union City, California 94587. Remember to tell 'em Model Builder sent you!

Russ Barrera brought over one of the new North Pacific ready-to-fly models. Most of our readers are familiar with this firm's SLEEK STREEK and SKEETER, but the new series is an entirely different concept. Featuring all-foam fuselages and flying surfaces, the models are available in low-wing, high-wing and biplane form. Featured are the usual sliding plastic wing clips to permit fore and aft movement of the surfaces for balance adjustments. Available at hobby stores nearly everywhere.

**SPEAKING OF SLEEK STREEKS**

Dave Gibson suggests that a fun

addition to any contest would be a Sleek Streek rubber speed event. As the models are only distributed to the contestants shortly in advance of flying, no one should have any special advantage. Each person writes his or her name on the model for identification purposes, and may perform any modifications desired, except only kit components including rubber may be used. Object is to fly the models straight and level over a given distance (Quite a trick in itself!). No timing equipment is required, since the models are launched simultaneously. First one across a specified line wins, and mid-air collision possibilities merely add to the excitement.

Regarding the reduced interest in free flight gas scale, Dave feels the high risk of model destruction during initial test flying is the major deterrent. He suggests that building larger, slow-flying models is the answer. In addition to the greater realism, crash damage is minimized, as compared with the more frequently seen undersized, overpowered "buzz bomb" types, which gyrate wildly and dangerously.

#### THE HIGH AND THE MIGHTY

Walt Mooney recently received a letter we felt deserved to be shared with our audience. The sender was J.V. Gordon, of San Francisco, California: "Dear Walt; been having so much fun with your (Peanut models). The joy and

delight others and I have experienced watching the graceful flights of the H-12, Ord-Hume, DeH.6, and Stahlwerk at dusk in the Polo Field at G.G. Park, is almost indescribable.

"The DeH.6 is now the property of Ernie Gann, the marvelous writer of many books of flying people and machines.

"His daughter had come into my shop . . . on noticing several of these models hanging among my frames in the window display, she became ecstatic. One discussion led to several others and she related to me that after presenting (her father) with the De H.6 and a Peanut Fleet Bipe I also made, there were tears in his eyes as he fondled them.

"With best wishes for your continued activity and success,

Jean Victor Gordon"

#### SILLY SIGN-OFF

Frederick P. Eade stopped by to tell us about a new aerobatic maneuver, which is called the "Lancelot". Only to be performed by Knight-flyers! Hsssss.

#### Peanut . . . . . Continued from page 51

wing tips and cement them in place. Block the extreme tip up so they will match the front view. Now cement the spar in place on the rib bottoms. Then cement the rib tops in place. When this assembly has dried, cut the leading and trailing edge, and spar, for the dihedral break. Cut out the dihedral brace. Slip it into the root ribs and cement the spars to it. Note the shape of the leading edge cut-out in the center and cut and fit a piece of one-sixteenth sheet for it. Cement all the dihedral breaks.

The tail surfaces are built flat over the plan. Tips are made from sheet balsa.

Prepare the parts for covering by sanding all the structure with fine sandpaper, 280 or 320 sandpaper is ideal, but any fine sandpaper will work. Give the outline of the tail surfaces a round cross section, except where the vertical tail will be attached to the fuselage.

The leading edge of the wing should be rounded and the trailing edge tapered as shown in the wing rib drawing. The tips should be rounded also.

The structure should be covered with lightweight tissue. If the tissue has noticeable grain, make sure it goes lengthwise of the part being covered.

Water-shrink the covered parts. Then give them a single coat of thin dope.

Generally, it's easier to add insignia, lettering, and other decoration such as moveable surface outlines, while the model is disassembled. So do that job next.

Make up the struts and landing gear fairings. The struts should have tear-drop streamlined cross-sections and the leading and trailing edges of the fairings should be rounded.

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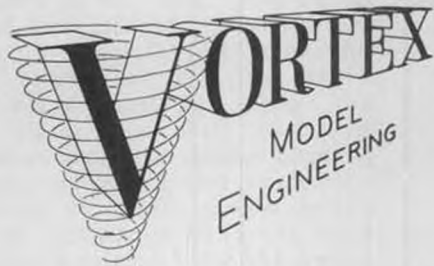
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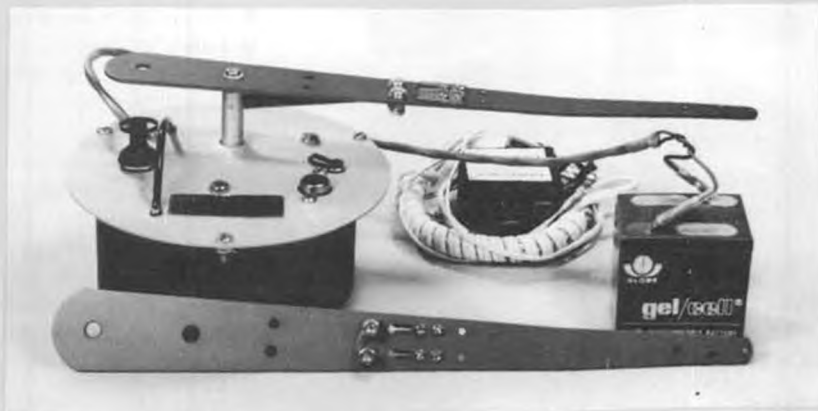
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Assemble the model. Make sure it is assembled true to the plans. Then add the windows and windshield.

Either carve a propeller, or select one of the many plastic propellers that are on the market. Bend the prop hook, and using a Peck Polymers thrust bearing, install the propeller on the nose block.

Use scrap balsa to simulate the engine cylinders.

A single loop of one eighth flat rubber will power this model for outdoor flights. For indoors, smaller rubber should be used.

Have fun with your Aeronca Defender.

**Counter . . . . .** *Continued from page 11* information, and a free brochure. Mention that you read about it in MB.

Even though many of their products can be used in models of all sizes, Ace R/C Inc. can truly be called the home of one-stop shopping for the Larry Renger's of R/C.

Its latest offering in the radio field is the three-channel Digital Commander kit, with a number of very interesting features. The transmitter makes use of an open-gimbal two-axis stick, and a throttle stick with trim for the third channel. It is expandable to more than three channels, uses economical dry batteries, and includes a battery condition meter.

The receiver is designed on two decks, for minimum size and light weight. The servos use the popular and proven D&R Bantam mechanics and the Signetic 544 amplifier. The airborne battery is composed of GE 400 mah cells, and a charger is furnished. The airborne system weight, using two servos, is only 5.75 ounces. The addition of the third servo increases this to 8 ounces.

Price, in kit form, with two servos, is only \$109.95.

If you have to go even smaller, you may be interested in the Ace Micro Servo, measuring only .625 x 1.25 x 1.28 inches, and weighing only .75 ounce. This wee one features about 4 lbs. of thrust, and outstanding resolution and transmit time. This amplifier also uses the Signetics 544 IC, and even though it is small in size, can still be assembled by anyone with little previous kit-building experience.

The Micro Servo will work with any positive pulse system, and a pulse inverter is available for negative pulse systems.

Using a 1.5 ounce receiver, and 100 mah battery, the weight for a two-channel airborne system is around 4 ounces.

And since you've got to have something in which to fly the whole thing, Ace R/C brings you the GLH II (Go

Like Heck), the 1/2A Racer so popular and successful in West Coast competition. In addition to going like heck, it is claimed to possess fast and solid performance with good tracking and predictable response.

The span is 32.25, area is 204. Using a Tee Dee .049/.051, and a two-channel radio, the flying weight is 20 ounces.

Available with a foam wing at \$16.95, or a built-up one at \$18.95. Try your local dealer first, if not there, write to Ace R/C Inc., Box 511, Higginsville, MO 64037. Tell them MB sent you.

California Hobby Distributors announces its full range of steam engines for Radio Controlled scale model boats and ships. Four models are available, all high precision and self-starting. The brass boilers also include base regulator valve, steam whistle, remote regulator, safety and overflow valves. Enough heat for 20 minutes operation is supplied by the companion boiler.

The engines are designated as Model T1D, 1-cylinder, 5400 RPM, at \$69.95; T2R, 2-cylinder, 3000 RPM, at \$129.95; T2DR, 2-cylinder, 5000 RPM, at \$144.95; and the T3DR, 3-cylinder, 4800 RPM, at \$199.95.

Boiler/Burner assemblies, Model B2E for the T1D and T2R is \$74.95; B2F or B3 for the T2DR and T3DR engines are \$94.95 and \$109.95 respectively.



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### FEATURES:

- Molded Delrin Body
- Contoured To Fit The Hand
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- No Pressure Build-up
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- Includes medium tip. Large & small tips available, \$6.45 ea.
- Compressor adapter (1/4" Std.) with 8' heavyweight hose, \$4.00.

The BASS Airbrush is an external-mix, precision instrument that sprays a variable pattern from 1/16 to 2 inches wide.

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includes shipping and handling

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Dealer inquiries invited.

# MODEL BUILDER PRODUCTS

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Model B3 provides the longest running time.

See your local dealer, and have him order yours from California Hobby Distributors, 415 So. Palm Ave., Alhambra, CA 91803.

A number of new and interesting products have been announced by Davis Diesel Development. First, and of primary interest to fans of the original .049/.051 conversion, is a similar type conversion kit for the Cox Pee Wee and TeeDee .020 engines. This conversion, needing only seconds to make, gives you an engine that requires no glow

plugs, no batteries, no fuel proof paint, yet is alleged to swing a 6x3 prop at from 3000 to 8000 rpm. At your dealers, for \$9.95 including a half-pint of fuel, or direct, for \$9.95, plus \$1.50 postage and handling.

A unique twin-exhaust stack system for the Cox .049 and .051, known as "STAX", has been developed and is now available. It is made of high-temperature silver-gray silicone rubber, is installed simply by stretching it over the cylinder head and dropping it into position. It will contour itself, keeping your plane cleaner, and keeping out life-reducing dirt.

It is claimed that by filling or squeezing the ends, "Stax" can be converted to a muffler or throttle. Only 98¢ at your dealer, or \$1.00 direct.

New fuel bulbs, in 1 ounce Micro and 2 ounce Mini sizes have also been introduced. Made of a special Blue synthetic rubber, with long neck and brass nozzle, they are just the thing for smaller engines. They are priced at \$1.49 and \$1.69 respectively, at your dealers. Add 50¢ if ordering direct.

The wide acceptance of the original D-Varnishing Brush, for .049's, has led to the availability of similar brushes for all sizes of engines. They remove carbon and maintain engines at peak design levels of performance. Prices are: .020- \$2.69; .049/.051 - \$2.69; .15 to .21 - \$2.98; .35 to .46 - \$3.49; and .60 to .78 - \$3.98. For direct mail, include 50¢ more.

All from Davis Diesel Development, Box 141, Milford, CT 06460.

If you fly a large glider such as the Sallaire, or Legionaire, launching it probably stretches both your resources and imagination to the limit. Wanting to save wear and tear on your resources and Imagination, Craft-Air now has available for you its Deluxe Super Duty Hi-Start, which is designed to get your big birds up in thermal-land where they belong.

This Hi-Start produces a 16 pound pull, as compared to the lighter-duty types of 4 and 10 pound pull. It uses the same quality surgical rubber tubing, reel and related hardware as the Craft-Air Standard Class and Heavy-Duty Hi-Starts. Included are such necessities as nylon line, parachute, steel stake, and steel tow ring.

The Super Duty Deluxe Hi-Start is priced at \$44.95; replacement one-piece surgical tubing is priced at \$26.95, at most hobby stores catering to the glider fans.

Two new and interesting products have just emerged from the same hangar that produced the well known and successful "Sallaire" glider, Craft-Air.

First is the "J-BIRD", for the modeler

## SOCIETY OF ANTIQUE MODELERS MEMBERSHIP APPLICATION

DATE REC'D.

NO. \_\_\_\_\_  
DO NOT WRITE IN THIS SPACE

I hereby make application for individual membership in the Society of Antique Modelers.

NAME \_\_\_\_\_ BIRTH DATE \_\_\_\_\_ YEARS MODELING \_\_\_\_\_

ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

Please check if you belong to any of the following:

A. M. A. \_\_\_\_\_ NO. \_\_\_\_\_

M. E. C. A. \_\_\_\_\_ NO. \_\_\_\_\_

S. A. M. CHAPTER \_\_\_\_\_ NO. \_\_\_\_\_

Note: Membership includes 15% discount on one year MODEL BUILDER Magazine subscription. Give S. A. M. No. when subscribing.

Enclose Membership Dues of \$3.00 and send to:  
Society of Antique Modelers  
1947 Superior Avenue  
Whiting, Indiana 46394

In making this application for membership to the Society of Antique Modelers, I agree to abide by the rules set by the Society and realize that the goals of S. A. M. and the Old Timers movement are to encourage participation above competition and is dedicated to the preservation and reproduction of vintage model aircraft.

Signed \_\_\_\_\_

who flies for fun, or is in the learning stages. This glider is a joint effort by Hi Johnson, designer, and Craft-Air. It features some new manufacturing methods and materials, such as an ASA plastic fuselage around a balsa crutch, foam wing reinforced with balsa and spruce and covered with "greenskin". The wing span is 97 inches, area is 921 squares, weight is 46 ounces, for a wing loading of 7 oz/sq.ft.

The J-BIRD is priced at \$59.95, and is available at most hobby stores.

For the fan of small stand-off scale R/C, Craft-Air introduces its Buhl Bull Pup. Classified as "Sport Scale", for .09 to .15 engines, and 2 or 3-channel radios, this deluxe kit includes hardware, formed landing gear, vacuum formed ASA fuselage skin, pre-cut plywood and balsa parts.

The wing area is 269 sq. in., at a span of 42 inches. The flying weight is 25-32 ounces, at a wing loading of 13-17 oz/sq ft.

The inclusion of so many pre-cut and pre-formed pieces make this a very quick and easy-to-build model. The flat bottom airfoil makes it easy to fly, an ideal trainer.

The Craft-Air Buhl Bull Pup is priced at \$34.95 at your local shop, or write for more information from Craft-Air, 7851 Alabama Ave., Canoga Park, CA 91304.

\* \* \*

New for 1977, from Peck-Polymers, all kinds of CO<sub>2</sub> Goodies.

Tanks and chargers, the former in sizes of 1-3/4, 2-3/4, 6, 10, and 20 cc, giving engine runs of from 5 to 10 minutes . . . the latter is a new system designed to fit the "ANSUL" fire extinguisher CO<sub>2</sub> cartridges. These cartridges will give you hundreds of flights each, and can then be recharged at your local "ANSUL" dealer. Designed by Bill Brown for his engines, both charger and tanks can be adapted to Shark and Telco engines. The charger adapter is \$7.95.

The "One Nite 16" has gone CO<sub>2</sub>. Instructions and materials are now included with this popular kit for its conversion to CO<sub>2</sub> power. It can be easily changed to rubber or CO<sub>2</sub> right at the flying field. The "One Night 16" is still only \$3.49.

Kits, engines, chargers, tanks; all from Peck-Polymers, P.O. Box 2498, La Mesa, CA 92041.

\* \* \*

"SUPER RPM" lubrication additive, described as a friction modifier, is a new product being offered by Lube Specialties, 1152 W. 9th, Upland, CA 91786. It can be added to your fuel or through the venturi, and is claimed to increase the rpm of a Supre-Tigre 15X by 700.

This liquid material consists of microscopically small Teflon beads suspended in an inert super-hydrogenated amino carrier. The high capillary action

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NEW . . . . . \$29.95  
Auto charger provides controlled discharge or fast, 15 minute charge from auto cigarette lighter socket. A must for competition.

LEISURE 6-cell electric race car,

FEATURES: only \$239.95

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of this carrier coats the engine's interior parts with a microscopic layer of Teflon, reducing friction and consequent wear.

The material is not affected by the temperatures normally reached in model engines, does not leave a varnish or residue, and is suitable for all classes of sport and competition engines. Its use is also recommended during engine reassembly after repairs or modifications.

A 2 ounce bottle, as recommended to treat one gallon of fuel, is \$2.95. Presently available only from the manufacturer, dealer and jobber inquiries are invited. Tell 'em where you read about it!

\* \* \*

We have pictured two of the many for which plans are available from Classic Era Modelplans. Devoted strictly to rubber, mostly scale with a few sport types, all of these plans are classics, and the flight ability of models built from them was proven years ago.

You may choose a Bellanca Air-cruiser, a Bristol F2-B, or a P-26, if flying scale is your choice, or the Embryo Mark II or Peerless Challenger ROG, as pictured, if sport is for you. The prices range from \$1 to \$2, and a complete list plus sample Peanut Scale plan can be obtained for \$1, from Classic Era Modelplans, 355 Grand Blvd., Bedford, Ohio 44146.

\* \* \*

The Prather Products line of "Pre-

cision Products for the Modeler" has been expanded . . . Again! It has recently acquired the R.N.S. Motor Mount Company, and will be manufacturing and distributing the R.N.S. mount as the Prather Custom Mount. It will be available drilled and tapped for some of the most popular engines, and also undrilled. The Prather mounts are made of the highest quality bar stock aluminum, milled for precision fit and true alignment. All of the mounts will accept fuel pump-equipped engines.

The line has been expanded to include mounts for the following: K&B .40; ST X-40; Webra Speed; Kraft .61; Veco .61; OS SR-60; ST G-60; also undrilled .40 and wide-beam .60. All are priced at only \$16.95, and available at most hobby shops. Prather Products, 1660 Ravenna Ave., Wilmington, CA 90744.

\* \* \*

Model Rocketry having reached the state of sophistication that it has, the Rocketeer is faced with many details that require his utmost attention to insure success. And most important, necessary at all times, is a good launch, in turn determined by good launch equipment.

Centuri has two accessories, designed to give you precise and reliable model rocket launchings.

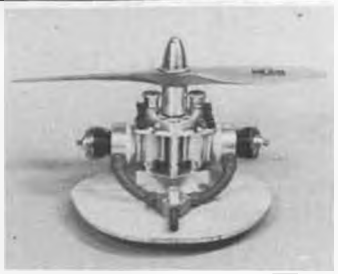
The "Powr-Control: an electrical

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(Pat. Pend.)

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- FRONT AND REAR BALL BEARINGS  
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"Small enough for a schoolyard - large enough to compete"



1938 "Mercury"  
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- True Scale
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control unit designed for any 6 or 12 volt power source, is ideal for use when multiple engine ignition rockets like Centuri's giant Saturn V.

The "Power Tower" is an extra-sturdy large stand, complete with exhaust deflector, tilt adjustment, and designed to accommodate the heavier rockets such as Centuri's Science Fiction "Super Kits".

Power-Control, catalog number 5623, is \$6.00; Power Tower, catalog number 5601, is \$5.00.

For further information about these state-of-the-art launching accessories, or for free catalogs detailing all its products, write to Centuri Engineering, Box 1988, Phoenix, AZ 85014.

What is Magnum Power Fuel, and why is it so different? According to the manufacturer, George Aldrich, this fuel will allow your engine to perform at a higher power output for a given percentage of nitro, at a much lower operating temperature. This is accomplished by reducing friction, through the use of uniquely different lubrication methods. The viscosity of this fuel is said to be lower than that of fuels using different lubricants, which means a leaner needle setting is required with Power Fuel for a comparable engine setting. Therefore, if the setting is leaner, the engine will run longer on a given amount of fuel. An engine set for

other types of fuels will be quite rich when started on Power fuel, and will require adjustments to both the high speed and idle settings.

Power Fuel is said to cause less mess on your model. A shot of 3-in-1 oil or WD-40 is recommended in the exhaust and venturi after each flying session to prevent internal rust.

A number of different fuels for specific purposes are available, as are glow plugs and other speed equipment. Write George at Aldrich Products, Inc., P.O. Box 1426, Mission, TX 78572, for complete information.

Dave Platt Models, of Miami, has announced a couple of new interesting products; one being Dave Platt himself. This well known gentleman, who left the company in April '76 has now returned as sole owner, and is now fully operational at 2657 NE 188th St., Miami, FL 33180.

The other item of interest is the "Duellist 2/30", a 67 inch original design twin-engined sport and pattern R/C ship. Release of this kit, which is an addition to the previously announced line, is expected early this summer.

For the "Go Fast and Turn Right (Yeah, RIGHT)" crowd, Octura Models announces a new motor mount for twins, in gold, yet. Designed to securely hold two .40 (6.5cc) or two .21 (3.5cc)

engines, this mount fits between engine bearers spaced 5 inches apart, and interchanges with Octura 5-55 and 5-60 mounts. The engine mounting centers are 2-1/16 inches apart and are machined to locate crankshaft centers on end-pad mounting holes' center line.

The same high tensile strength aluminum extrusion as used for other Octura mounts is used for this one, and eight 6-32 socket-head engine mounting screws are included. The size is just right for a drop-in fit of the K&B 6.5, OPS .40, OS .40S, or the K&B 3.5. The finish is gold anodizing, for maximum corrosion prevention.

At all R/C boat oriented hobby stores, or check with Octura Models 7351 N. Hamlin, Skokie, IL 60076.

While on the subject of R/C Model Boats, in our February column, we reported that the "Formula V", a 39 inch Deep Vee boat for .40 engines, available from Wardcraft Marine, was an Ed Fisher design. Well, we goofed; this is the same boat used by Frank Ward to set the NAMBA record for its class, and is a Frank Ward design. Sorry, Frank, and Ed!

If you are an R/C car driver, and interested in going faster, you need the real McCoy . . . Dick McCoy, that is, who has available a large number of accessories and services for Veco 19 and K&B 3.5cc (21) racing mills. It is all on both sides of his 8-1/2 x 14 price sheet which lists everything from a kit to convert your 19 to a 21, special hardened crankshafts and connecting rods, to completely customized engines of your choice. Special ROAR-approved designed mufflers are also available, cast from light weight magnesium, and angled as necessary for race car installation.

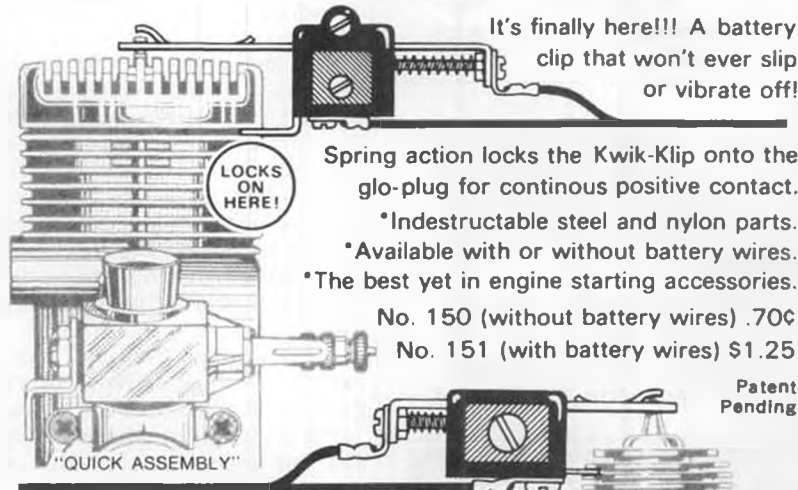
It is too much to list, so contact Dick at C & H Inc., 10767 Monte Vista, Ontario, CA 91761, for your copy. Be sure and tell him you read about it in MB.

Next to the latest issue of Model Builder, the only other publication we know of that is sure to bring joy to a modeler's heart is a new tool catalog. And one of the most interesting to cross our desk in a long time is offered free, by Jensen Tools & Alloys, 4117 North 44th St., Phoenix, AZ 85018.

This 136 page catalog includes over 3000 tools of interest to field engineers, technicians, instrument mechanics, locksmiths, watchmakers, electronic hobbyists, and of course Model Builders. Categories covered include; micro-tools, test equipment, soldering equipment, tweezers, screwdrivers, cutters, drafting supplies, and power tools. Everything is well illustrated, many in color, and full descriptions are included. The catalog also contains technical data, conversion tables, glossaries and much of general

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It's finally here!!! A battery clip that won't ever slip or vibrate off!

Spring action locks the Kwik-Klip onto the glo-plug for continuous positive contact.

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No. 150 (without battery wires) .70¢

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Patent Pending

## 1/2 A KWIK-KLIPS

For engines .020 to .074.

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Shown actual size on an .049.



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interest to all users of small tools.

To receive yours, it is only necessary to write to the above address and tell them you read about it in MB.

\* \* \*

A winner in the last two S.A.M. Nats, the "Dallaire Sportster" is now available in kit form from M & P Design Group, Box 338, Lone Oak, TX 75453.

This 120 inch span, 1550 squares kit weighs in at 6.5 pounds, and is designed for .45 to .65 engines, 2 to 3-channel radio. Extremely thorough plans and instructions are provided, showing every detail of the radio installation. Full length spars and longerons are included, no splicing is necessary.

The "Dallaire Sportster" kit even includes a set of plans as furnished with the original 1937 kit, suitable for wall poster. Price is only \$59.95.

M & P also has developed a number of hand launched glider kits, all designed by Dick "Fast Richard" Mathis. Each is intended for a specific user; the "Wrecktangle" is designated as a kid's glider, the "Grasshopper" for experienced but weak armed flyers, the "Butterfly" is a high performance machine, and "F.R.'s Glider" is claimed to be a world champion.

Write M & P for complete information, and tell them where you learned about their goodies.

\* \* \*

A new kit of the Britten-Norman "Islander"; for twin electric power, is now available. A combined effort of Polk's and Model Flight of England, this model spans 1270 mm (50") for a flying weight of 3-3/4 pounds when powered by two Model Flight Hummingbird Motors. These motors are prewired for simple installation, and are powered by a 9.6 volt pack that allows 8 to 10 minutes of flight on a 30 minute charge.

The kit includes pre-covered foam wings with installed aileron cables, vacu-formed nacelles, and all necessary hardware and pre-cut and pre-fabricated parts. The airplane kit is priced at \$69.95, the Twin motors with nicads are \$159.95, and the Charging Monitor is \$39.95.

From Polk's Model-Craft Hobbies, Inc., 314 Fifth Ave., New York, NY 10001.

\* \* \*

If you've got things to stick together, Economy Plus of P.O. Box 4145, New Windsor, NY 12550, definitely has things to stick your things together with.

It has "Stuk", an alpha-cyanoacrylate instant contact adhesive, to be used in the manner for the material that most of us have become familiar with. It has "Stuk+", a timed contact adhesive that sets up in 90 seconds and will bond

porous surface. It acts as a gap filler, allowing its use on rough parts and parts that don't quite fit. And "Economy Plus" has Stuk+ Set which is used with both Stuk and Stuk+ to fill in gaps and bond porous materials, to make Stuk+ cure on application, or as a primer permitting bonding of difficult materials. Complete instructions and suggestions for the use of each of these products is included with each container.

"Economy Plus" also has "Hold-up", a vinyl copolymer emulsion designed for high speed gluing of wood. It dries clear and hard, is easily sanded or painted over.

"Economy Plus" has polyethelene gloves and aprons for your protection, and aluminum cups for mixing your epoxies and paints. In fact, when it comes to sticking things together, they seem to have it all. Check for these products at your favorite store, or write for complete information. Tell them MB sent you.

\* \* \*

More and more molded styrofoam airplanes and appearing on the scene, and Midwest Products Co., 400 South Indiana, Hobart, IN 46342, has introduced a new product especially made for fans of these fast-build models.

Named "Styromate", it is a sealer that gives the surface a smooth tough finish ready for your favorite paint, yet adds little weight. It brushes easily, fills



Dealer inquiries invited.  
(408) 379-9701



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High strength adhesive PLUS 30-second set time to allow adjustment of minor alignment problems. Higher viscosity for filleting slight misfits.



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"PAMPA has now established guide lines so that a suitable number of top fliers can be identified to be seeded during qualifications. This number is to be determined by the Event Director and is to be based on a number of factors, including total entry, the individual competitors actually entered, and the number of qualification circles to be used. The individuals to be seeded are identified primarily by their record at the previous two or three Nationals and FAI team selections.

The Event Director then 'balances' these fliers among the circles to further prevent making one circle more or less competitive than another.

"It should be emphasized that just because a flier is seeded, he is *not* guaranteed a qualifying position. Indeed, seeding is a recognition of previous superior performance and should be viewed as an honor. But seeding is accomplished to make the competition as fair and equitable for each individual as possible, whether he is seeded or not. Furthermore, each individual seeded flier must still perform in order to secure the opportunity to fly in the finals. Nobody is unbeatable, and this has been amply demonstrated over the years. Everybody starts with the same score sheet during qualifications. That is their opportunity to prove that they should be competing with the best fliers of the country during the finals. The unseeded flier still has the chance to out-

score the seeded fliers, but he, just like the seeded fliers, must fly well to reach the finals.

"Random circle assignments will result in unequal levels of competition among the qualification circles. This is not fair to the competent fliers who are unfortunate to fly in the inevitable 'tough' circle or 'loaded' circle. It further allows somewhat less competent pilots to reach the finals when better pilots did not. This degrades the whole purpose of the competition to determine the Top Ten, the Top Five, and the Open Champion. For these reasons, PAMPA will continue the process of seeding recognized top fliers and balancing their assignments among the qualification circles in the National competition."

Next we hear from my friend Arlie (who?) Preszler, Event Director for Precision Aerobatics at the '77 Nats.

"Processing/Appearance Judging: I also had to commit us on this one. It is going to be done Preszler-style this year. Maybe I will have some people unhappy with me relative to the appearance judging, but I am going to have a ball.

Here's how it is going to work. You show up at the hangar at 7:00 pm with your pride and joy all polished up, you let me check it for proper AMA identification, give me any special handling instructions, and sign a certification that you are the Builder-of-the-Model. Then I put your airplane down inside a large roped-off area (like the Formula I guys do), while you draw for position. For the next two hours, you stand around and watch my Assistant and I place the airplanes in groups according to the number of appearance points they are to receive. You hang around for a few more minutes while the scores are recorded and the photographers do their thing, then take your airplane and cut out . . . the anticipated time . . . 9:00 p.m. I'll try to give you some Appearance guidelines on how the judging will be conducted next month . . . for the time being, let it be said that I think you guys build beautiful airplanes, and that includes Bobby Hunt-type airplanes and Al Rabe-type airplanes, although I can't say that I'm too wild about Wynnstripes. I really admire the work that you Stunt Freaks do . . . but sorry guys, everyone can't get 20 points."

**WITH STUNT ON OUR MIND,  
LOOK AT WHAT'S NEW**

Newest Stunt kit is the Miss Poppy, from Ed's Garage, owned by Ed Jacoby. I just got my Miss Poppy the other day, so I've been rummaging through it a bit and wishing I had time to get to a-building on it. The kit features many nice touches; foam wings cut (and cored) by none other than Bob Hunt, complete hardware, pre-bent landing gear legs, all machined parts (including the ply formers), a very nice and complete instruction book, rolled plans and a few

the pores thoroughly, and dries in 4 to 6 hours.

"Styromate" changes color when it has dried, which also lets you know if you've gone through when sanding. It sands well, and is easy to touch-up. For best results, Midwest recommends its companion "Styro-mate Thinner" be used for diluting and as a washcoat for the foam.

This sealer comes in a 16 ounce, wide-mouth container with screw-on lid, for \$6.50. Thinner is \$2.50 for 8 ounces.

\* \* \*

C/L . . . . . Continued from page 41

The PAMPA organization is well on the way towards a very successful '77 Nats. Lots of work is being done, and here are the results of some of it, as lifted from the PAMPA n/l.

First up is PAMPA Prez, Keith Trostle, outlining the "seeding" policy to be used.

parts that are molded from A.S.A. At first, Ed was going to include Midwest's new matched, accordion-folded wing skins, but finally decided to go with something called "Super Skin". I don't know exactly what it is, but it looks similar to tag board to me. I'm not familiar with this stuff, but initial impression is that I would much prefer balsa sheeting. Ed says that, although balsa is initially lighter, the finished weight of "Super Skin" is less than the finished weight of balsa, since "Super Skin" does not require the usual coat-after-coat of filler. Could be, it seems slick enough to paint right cover. But I'd still like to go with balsa, as I always use Monokote on my Stunt ships. With a Monokote finish, the "Super Skin" probably won't be so super.

Although the Miss Poppy is truly an outstanding kit, and is the only one designed for a .46 that is commercially available, I regard the \$79.95 price tag as a bit much. Yes, even scratch-built Stunt ships cost a bundle these days, but the Miss Poppy is still very expensive. Too bad, too.

#### STUNT SHIPS

#### WRAPPED IN MONOKOTE??

I know that many SSF's cringed when I mentioned that I do my Stunters in Monokote, but I personally cannot see doing it any other way. If you try preparing the surfaces to be covered with "Balsarite", from Coverite, and then ironing on the Monokote, you may be very surprised to see an attractive, long-lasting, and easy-to-maintain finish. Might not be as Show-Biz as hand-rubbed dope, but much more practical . . . specially for someone like me who needs flying time more than sanding time. Another over-looked iron-on finish is Coverite's Silkspun Coverite. It is light, easy to apply, and comes in several colors. The stuff is also very strong and takes very little filling prior to painting. I think you ought to at least take a look at this product, you might just like it. I DON'T PARTICULARLY CARE FOR THE C/L COLUMN BECAUSE . . .

That was the title of my first (and probably the last) essay contest. Lots of people wrote in, for which I forgive most of you . . . after I punish you by not selecting your letter as a winner.

Initially, we were going to have one winner, but two losers are generally more fun than one winner, so here are a couple of real loser letters . . . that each won an MB subscription!

"Gunji Dan Ruthefuurd  
c/o Muddled Belldurr

Deer Sur,  
Ennybuddy hoo haz too yuz hes tyme rieting doomb rtickles fore flakes hoo r farmur oners of airplyne cumpaneas and hose wyfes cell hozes with modell shopes surtunlee kan fynd a batur weigh two waist thyr tyme . . . Uy cee eye kant stynd ur ryting atoll . . .

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Synseerlee,

Scott Jackson, D.B. (Doc's Brutha)"

Weird letter, huh? Poor Doc Jackson, no wonder he's like he is. Incidentally, Scott's P.S. of "All right mutha, send the subscription", moved him up from an also-ran position. A positive attitude certainly helps.

And the other winner (loser) is:

"Dear Dirty,

I don't particularly care for the C/L column because everytime I read it and find out about all the neat stuff going on, new techniques being used and all the useful goodies being introduced, I feel like locking up my workshop and retiring from the sport. As an example of how your column depresses me, I used to think my good ol' Flite Streak with a Johnson .35 on it doing 70 mph was a Fast Combat ship . . . after all, it was this combination that won Combat at the '58 NATS! But then you come along and open your yap about things like MK III Fox Combat Specials, foam airplanes as big as a barn door, and going 100 mph . . . disgusting. Furthermore, about the time I'm finally able to beat that snotty kid down the street with the Ringmaster, you start spouting off about the performance of guys like Brasher and Rutherford . . . who cares. It took me five years to beat that kid.

"Another thing that irritates me about your column . . . I never see my name in it. Just because I never send you any material or win any contests is no excuse for this effrontery, especially since I'm so popular at local contests. Whenever I go to a meet and lay out my Combat Clipper with a nifty Green-Head Torp (I got it second-hand at an auction 12 years ago) everybody flocks around and wants to know who I am. They all want to get matched up with



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me, which proves my popularity. When the match is over, they always say nice things to me, like 'Nice match . . . easiest one I ever had!'

"But do you ever see fit to include these accomplishments in your crummy ol' column? Never. You arbitrarily demand stuff like black and white photos or technical reports on current events or products, which indicates you hold it against me because my Brownie broke.

"I might also add that having a neighbor like Phil Cartier, doesn't do much for my depressed state either. Everytime I see him at the local market weighing bologna on his gram scale, he always reminds me that I really should start putting my control systems on the inside of the wings. Not only that, but he actually likes your column! Both you guys are disgusting.  
Gil Reedy."

Thanks for the entry Gil, it sounds as if you certainly do have a few problems . . . and no doubt Phil Cartier is little help to you . . .

# NORTHWINDS



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air speed can I expect?

GMA: You could easily get 10 mph increase from the meg on a *clean* model that's around 18 to 20 ounces.

DD: What kind of tank do you suggest?

GMA: See my column in a past Model Aviation for a good tank design.

DD: Ground handling is a big problem for me. Some say go with rear-set gear like the TR guys use. Others say to use swept-forward gear.

GMA: The ideal model on an ideal surface is one you can cut on the opposite side of the circle from your pit man, or at least 3/4 of a lap from him, put the wheels on the deck, and roll the model into the catch . . . take it from there . . . Grass requires more forward landing gear, bigger wheels, etc.

Perhaps use 2 or 3 models. Number one for smooth, hard surfaces with center-line of wheels about an inch in front of C.G., Team Race-style. Number two for grass surfaces with forward landing gear, big wheels, etc., and Number three an intermediate model with forward landing gear but small streamline wheels.

DD: Gear made with 1/8 inch music wire is easy to make and works fine for me. Is the Glenn Lee and Kustom Kraftsmanship titanium gear worth the expense?

GMA: The main advantage to the titanium gear is its simple mounting to the fuse and the neat thin wheels that both Glenn and KK make.

DD: Fuel is always a problem. I'm not set up to mix my own and have no desire to mix fuel if I can get commercial fuel that works. Can you suggest several brands that are readily available?

GMA: Very few offer fuel in the higher nitro contents. G/Y will usually take 50% to 60% . . . some run 65%. We make Magnum 50% and 65%, which can be blended to give the percentage needed, i.e. two parts 50% plus one part 65% equals 55%. At the present time, these fuels are still mixed with castor oil and Ucon 731. We have not converted our Racing fuels to the new and highly-different Power fuel idea. Test results are promising and we hope to release these by April '77. Nitrotane is the only fuel made in the higher nitro percentages that I know of, and could approve, and it works very well I understand.

DD: Glow plugs. I've tried them all (almost). None seem to be just right, if you know what I mean. I don't expect a blow-proof plug that will last through several practice sessions and then run a heat and final. But it would be nice to put a new plug in before a final and be 100% confident that it wouldn't blow before the race is over. To lose a race because of something as cheap as glow plug is very aggravating.

GMA: To date I've seen no plug that is as tough as a GloBee for meg or full pipe operation when they are right. Last summer, I was showing a customer,

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Next month we'll have the winner(s) of the nickname contest, assuming this kind of trash doesn't make me ill. GMA ANSWERS . . .

Back when we did the final bit on Project Goodyear, I asked for questions from readers concerning Goodyear, and George Aldrich offered to answer any and all. Following are the questions and answers. I put the questions in my own words, but they are representative of those asked by readers. I didn't edit George's answers, however, and for obvious reasons.

DD: Which version of the Rossi looks best right now? I hear the Sr. G/Y winner at the '76 Nats used an ABC FV Rossi.

GMA: Rossi 15 FV is still king. The ABC version works very well. Bill Lee was running an ABC with exhaust raised .007. The ABC exhaust is .013 higher than steel standard cylinder which I raise .020 for megaphone operation . . . although it runs quite well with open exhaust.

DD: What about the new Cox 15? I'm not bucks-up and really can't afford a custom engine.

GMA: The Cox 15 is the dark horse. First shipment had bearings too loose in the case, which I hear they've corrected now. Mine, even with the loose bearings

ran within 600 rpm of a reworked Rossi with only a head change and minor piston/cylinder fitting.

DD: The Falcon Spl., as used in Project G/Y, seems to be a good plane for the event, but everybody and his brother has one. Can you suggest several designs that are out-of-the-rut, yet are competitive?

GMA: Many designs would work well. Governing thing is wing location, as to whether or not a megaphone will fit.

DD: Is a megaphone really necessary? They are incredibly noisy and Dirty says that he is going fast without a meg, so why bother?

GMA: The megaphone is: Noisy, messy, more critical (by a bunch), a headache to install . . . but it is much faster. Dick Lambert, 1974 Nats Rat king, was an also-ran in G/Y for several years; switched to the meg, got all his stuff together and turned a 5:47 at the King Orange!

DD: Also, isn't there considerably more to making a meg (or any kind of pipe) work properly than simply bolting it on?

GMA: The main trick with the meg is getting it short enough in conjunction with correct head clearance . . . plug life is the major problem.

DD: If there is an advantage to a tuned exhaust, what kind of increase in

on my test bench, how to run a GMA Rossi on the meg and telling him he needed GloBee plugs to be able to restart. Well, I proceeded to fire off the Rossi on 50% juice and blew a GloBee on every run . . . no restart. I switched to 25% juice . . . same thing. Went to Magnum Cool plug, 10 restarts. Back to 50%, 10 restarts. In the meantime, the head had been raised from .017 to .030! What amazed me more was the rpm drop was only 200 rpm! Conclusion: megs and pipes are finicky. There's no way my plug is as tough as a GloBee in the hot restart game *on the horn*. However, GloBee needs better quality control.

DD: What causes most plugs to fail?

What can I do to make the plugs last as long as possible?

GMA: Plug failure: 1) Seal leakage . . . If the seal blows it's like closing the needle valve two turns from a peak setting. 2) Head clearance too close . . . Any event that requires hot restarts is a compromise. You must sacrifice power and speed to get the restart. 3) Nitro content . . . If you run lots of nitro, be ready to add shims to keep a plug. Again, it's a compromise.

DD: Any tricks up your sleeve concerning fast-fills? They seem quite unreliable lately. Some work fine, others don't work at all. And the good ones seem to quit sealing with no warning . . . usually after the first pit in a final!

GMA: URP! Don't know if they'll make new ones or not, everybody is complaining. Solution . . . solder a bicycle valve in tank and pressure fill??!

DD: What do you regard as the maximum and minimum practical weights for a competitive, yet durable Goodyear? I want good acceleration, but don't like building a new plane every few months, either.

GMA: Weight is critical in how a model trims in flight, not only as to pull (more pull slows you down) and line angle, but as to fuel feed. See my column in Model Aviation on tank and model trim. A *good*, clean model with a *good* Rossi can easily run 15.7 to 15.5 . . . add a meg and drop this to 14.5 to 14.8! Add a full pipe and drop it into the 13's or 12's!

DD: Both Kelly and K&W make 'glass props that are used in this area. Which is best and which is the easiest to get? Supply seems to be a real problem with the 'glass props.

GMA: Kelly makes the best I've seen, but he's soooo slow. The only time I tried a K&W it only ran 17 seconds or so and dropped 1/2 second when we trimmed 1/8 inch from the tips.

DD: What about Kelly's carbon fibre props? I heard that a few blew apart, due to the props being so rigid.

GMA: Kelly produced the carbon fibre prop and material was wrong. The supplier is still to replace his stock with the right stuff.

DD: Please suggest a starting point



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for me as to diameter and pitch on, say, a Kelly 'glass prop. This would be for a GMA Rossi. Same thing for a Cox 15, I hear they will swing a bit more diameter.

GMA: A Kelly 7x6 cut to 6-1/2 or 6-5/8 and pitched to 5-1/4 to 5-1/2 seems the going thing right now. Work blade to give 22,500 rpm on the ground, open exhaust. Top meg men are running 6-3/8 diameter, you gotta watch the rods, though . . . in-air revs have to be in the 28,000 range! Rossi and Cox are very similar in most ways, also ST X-15.

DD: Are there any wood props that can be made to be competitive? Can the glass-filled Taipan 7x6 be reworked into a competitive prop for a Rossi or Cox?

GMA: Not that I know and *NO!!*

DD: Are there any engines just released or due to be released that look competitive in the coming season?

GMA: The new Fox 15 is certainly Duke's finest effort, and ran very well in FAI Combat at the '76 Nats. How much Dick Stubblefield, super pilot, had to do with it, I don't know . . . I haven't had a chance to run one yet.

DD: What combination would you use to smoke 'em in the coming season?

GMA: Goodyear '77 if I was gonna do it?

1. Full-piped Rossi, Cox or ST X-15, either RV or FV.
2. Rivets model, balsa base construction.
  - a. Bamboo laminated to LE and TE. Bass stub or center spar.



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- b. Squeegee epoxy glue one coat, sand, two-to-three coats of clear, Japanese tissue cover and trim to save weight. Shoot for 20 to 22 ounces.
3. Suction tank, enlarged version of Bill Wisniewski's Speed tank, i.e., my column in Model Aviation.
4. Prime valve in exhaust manifold for hot restarts . . . or prime via opened shut-off while refilling.
5. Adjust head clearance to keep plug and hot restarts on 15% to 20%. This should give airspeeds in the 115's to 120's. Increase nitro to 30% to 40%, and back off head clearance until plug will stay in. This should give speeds in the high 130's and destroy Goodyear! Well, good ol' GMA has done just fine, so far. Now comes the heavy stuff . . . pay attention folks!!

DD: After having little success in G/Y with stock motors, I put out the bucks for a custom motor. It was a Rossi, of course, and as I had never owned one previously, I just had to take a look inside to see what work had been done to it. I was amazed to find that very little (apparently) had been done. Nothing that I probably couldn't do myself with a Moto-Tool. After looking at the engine, I put it back together carefully and broke it in. The engine has never gone very fast at all, and I feel that I wasted my money by having it custom built. The performance of this engine

hardly seems to justify the cost, so why should a custom engine, GMA Rossi's included, be (evidently) so highly regarded?

GMA: "As of Jan. 1, 1977, I am accepting no more engine work! Plans are to devote most time to fuel, glow plug and handle production, and develop new products . . . and get out and call on distributors, dealers and give talks and demonstrations to clubs. Have been asked to write a book on engine rework . . . maybe . . . if I can find time.

"I started doing engines full time in Aug. 1969 . . . no other income source. It's a pleasure to build an engine and see it reach it's full potential via someone else's talented hands. Many disappointments (70%) over engines that never reached potential. Most because the engine was taken apart to see what "tricks" were done . . . 90% of a real "honkin" engine is in the piston/cylinder fit. Regardless of what people think, this is my forte . . . heat treating pistons, honing cylinders and knowing how to lap a piston. If you only knew how many parts you ruin learning "that fit". When to say no more, "that's it". My pet peeve is those "experts" who tell you to loosen the bearings in the case until they're a light push fit, cold! Or, polish all parts to a nice bright shine. With the engine running, the case gets warm, the bearings slop in the case allowing the

shaft to bind in the casting. Then the polished parts run hotter than those with a dull finish, which just compounds all problems. It's one thing to convert heat to power via Charles' Law, but *created* heat via indo-thermic retention of heat is idiotic. I have an unproven theory that fuel charge speeds in model engines reach far higher speeds than in the larger two-stroke engines. Thus, roughing up the by-passes or giving them a matte finish helps "wet" the surfaces, giving a "stored" charge waiting at the intake port(s) to get in when they open. My engines at least never slowed down from this.

"Regardless of who you buy an engine from, if it doesn't perform, give the man a chance to rectify his problem or explain your problem. I've had Rat engines that would do 12 flat in one model only do mid-13's in another. Be sure you're right, then expect proper, fair treatment.

"Occasionally, you'll hit a real screwy engine. Bill Melton, from New Mexico, must have sent his Rossi back to me 4 or 5 times before I got it going . . . the last I heard it was running 112 to 115. Real runners don't happen by accident . . . they require a lot of painstaking care.

"Everybody has their good and bad times. I was "slow as Christmas" during my bad times and gave really super-service to others during the good times. To all who kept the faith, I say thank you sincerely. Some way I'll always find time to fix or repair the engines I build for each of you."

Now wasn't that a lot better than my usual trash? Thanks a bunch to GMA for taking the time to answer all of the questions put to him. Gotta run . . . we're on over-time!!

F/F Scale . . . . . *Continued from page 49*

Page 57 of the '76-'77 AMA Rule Book shows how this scale ruler can be made.

OK, let's see how all this gathered information can be organized into a scale presentation. First, get hold of a notebook binder or equivalent with at least nine title pages (or dividers). The purpose of these dividers is to facilitate the job for the judges. When they want to turn to a particular category, they can do so with little effort. Remember, the easier you make the job for the judges, the better your score is likely to be.

The first division should be entitled, "Written Description". This is where you describe your model, giving the scale, and pointing out all of the hidden detail that otherwise may go unnoticed by the judges. Be thorough but brief. Judges do not have the time to filter through information that is not pertinent to your specific model.

The next division should be labeled, "General Appearance". This is where the judges will compare your model to

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the real aircraft . . . items such as ground attitude, major parts relationships, or in other words, does your model resemble the real machine? Provide photographs of the real aircraft that best give your model a true impression of the real machine. Judges at this point will look at the photographs and step back from your model to make an evaluation.

The "Fuselage" is the next division. The judges will be checking the cross-sections, skin type (whether it is metal or fabric), how the stringers are spaced, etc. What I like to do and see, is to take the portion of the 3-view, sketch page (if there is one), which shows only the fuselage . . . top and side-views. Take a blank sheet of paper and make an overlay so that only the fuselage portions of the three-view are exposed. This way, only the pertinent data is visible, and judges aren't bogged down sifting through non-related information.

On either the same page or on the opposite page, have several photographs showing the fuselage of the real airplane. Show both sides, if at all possible. Seldom are both sides of an airplane exactly the same.

I realize that finding a real subject to photograph from one end to the other is not always possible, especially if it is a rare bird of some kind. Yet, researching and digging around for pictures is half of the fun of scale modeling. Just as an example, the other day I was at one of my favorite places again, Flabob Airport, near Riverside, California (I mentioned this airport several months ago), talking to Ed Marquard. Ed is the designer of the biplane that I'm building, and is one of the most knowledgeable men I know regarding aircraft, especially antiques. Ed has built a replica Miss Los Angeles, and is presently working on a Gee Bee Model Z. Naturally, I thought it a good idea to ask him if he by chance had any information on British lightplanes, and in particular the A.B.C. Robin (This is the model I'm building for the Nats).

During my conversation with Ed, there was an older fellow listening to us, and when he heard the words

A.B.C. Robin, he really came to light. Seems as though, in 1929, he was a student at the University of Indiana, studying aeronautical engineering. At that time, he had actually built a full-size replica of the Robin, and powered it with a motorcycle engine that happened to be available to him.

I have to call this more than a coincidence, since the Robin is really an obscure airplane. There was only one of these ever built. Well, after I regained my composure, he took me over to his trailer and started digging into his files for some information on this homely bird. So it pays to talk to a lot of people, whether you think they have aviation archives at home or not. Airport "bums" are a great source of information.

Whatever you do, DON'T show any pictures of your model. The judges are not interested in seeing photos of your plane. After all, it is right in front of them! Probably the only exception to this is if you have exact scale structure that has been covered up, then it would be appropriate to have a few selected photos. Use discretion. Even though you are enamored with your handiwork, don't get carried away!

The next division is "Wing(s)". Here the judges will be checking the skin type, rib spacing, aileron size and hinging, fillets, lights, fuel caps. Once again, make an overlay of the wing portion of the 3-view and any other wing detail. Use only photos that show wing detail. This set-up will be typical for most of the other divisions.

If you don't have many photos of your subject, one approach is to take a photo of the picture(s) you have. Then enlarge only the tail, cowl and engine, landing gear, etc. This way you get a lot of mileage with only a few pictures. I mention this only because a judge who is looking at wings only, as an example, is not interested in looking at any of the other portion of the aircraft. Incidentally, if your model's wing needs washout, and the full-size plane did not, the model is to be only lightly penalized.

The "Tail" is the next division. Again

the skin type, rib spacing, control hinging and actuation, tabs and fillets, will be a concern of the judge doing this section. Some of you may need clarification of skin type. This simply means that if the real airplane was covered in aluminum or plywood and you incorporated an open type of framework, then your model would be penalized accordingly. Use the overlay and photos as before. One suggestion . . . If the airplane you are modeling used external cables for elevator/rudder hook-up, use braided control-line wire. It comes in a variety of sizes, the smallest being .008 in diameter. This material really adds to the detail of any model. If you have to modify the incidence or change to a lifting-section tailplane, they too will be lightly penalized.

"Landing gear" is one division that can be overlooked by a modeler. The judges will be looking for operating features, such as shock absorbing and gear retraction (mostly R/C). Wheel wells, when incorporated, are also carefully looked at. Even though the tires and hubs are not mentioned, I can't help but believe that they will receive scrutiny as well, particularly the hubs. Set this division like the others.

"Engine(s), cowling, prop". This section will be examined for the spinner and prop, and the correct engine detail. (No penalty will occur for changing over to a flying prop at the flying site.) If the model you are entering has an exposed engine of some type, and the pictures you have do not clearly show this, then by all means use other engine data. This might include a picture of an entirely different airplane, but one that shows the engine more clearly. However, make certain to point out why you used a picture of an entirely different airplane than the one you have entered.

The next division is "Cockpit, cabin", which will be checked for correct interior structural appearance, colors, and size of the instruments faces and cases. Probably of all the categories, this is one of the hardest on which to get any information. Fortunately, there are

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and tail were built to one scale, and the fuselage was built to another, and as expected, nothing was mentioned in the documentation. Needless to say, this model did not fair too well. You are only hurting yourself in the long run!

To close this month, I have a neat hint to pass along that I received from George James. For rubber powered models, especially where weight is so critical, filling the pores or covering sheeted sections can be a pain. George uses white glue, thinned out so that he can airbrush a light even coat over the bare wood. The mixture penetrates into the wood extremely well. When the first coat has dried, he follows up with two more coats, letting them dry between coats. When the last coat has dried, he sprays a mist water coat. This gives the surface a perfect glaze. George then follows up using Dr. Martin Dyes. As long as a water soluble glue is used, the dyes will cover the surface beautifully. Sanding is not required between coats. The grain of the wood does not show up through the coloring. This is a very neat and easy way to cover the pores of balsa wood.

The Flightmasters will be holding their scale R.O.W. contest at Lake Elsinore on June 12, so West Coasters should mark this down on their calendar.

many more publications available that are showing this area on a variety of subjects. Again, thorough researching will usually turn up something. An acceptable procedure, if you cannot turn up anything, is to find a picture of a cockpit of an aircraft of the same vintage as the one you are modeling, and point out to the judges that it was likely that your airplane had a similar arrangement. Sometimes, as in my particular case, there is no photo, but a written description of what the interior was like, including the list of instruments the airplane had. In this case, underline the description, using red pencil, so that the judges can readily see this information. Judges typically are impressed with a well detailed, clean cockpit, so be a bit more fussy in this area.

Last but not least is "Finish, Color, and Markings". In this last division, your model will be checked for correct degree of gloss on the finish, and for complete stenciled markings. If you have chosen a rare design, you will probably have some difficulty in trying to find out how the real aircraft was painted. Sometimes, from a black and white photo, you can tell basically, particularly if it is a pre-WW I type airplane. Too often, whites or natural linen, reds, light blues and yellow look

alike.

If you have a subject where color and markings are plentiful, such as from a Profile Publication, make your choice perfectly clear so that the judges aren't looking all over for the information. Use a book marker where appropriate, and isolate the particular airplane. If your color scheme is in another book, point this out to the judges. Use the book marker again here, but also include the page number in case the marker gets lost or misplaced. I repeat, do not get carried away by having book-after-book of proof.

Well, there you have it, a thumb-nail sketch of how to prepare your data. Just remember to condense the material so that the best job of judging can be done. No judge will have the time or desire to go through stack after stack of books and materials. I cannot stress this latter point strongly enough. On the other hand, do not submit only just a very plain 3-view. It is better than nothing, but barely.

Another thing . . . don't cheat in any areas of information, otherwise they will be looking in all categories to see what else you've done to "help" yourself. If you have to increase the area of the stab or whatever, tell them. I can remember one R/C model of a P-38, entered several years ago. The wings

**Sailing . . . . . Continued from page 44**

sail in heavy air, make a third set of readings with a 3 pound weight at the mast head. When these are plotted in Figure 5, we see the effect that tightening the backstay has on mast shape. A sailmaker will now cut your main luff so that it will approximate (not match) the mast curve under tension. In this condition on the water, the sail will wind up being almost a flat piece of cloth again, like it was on the table when cut (Note that these remarks are only partly true for paneled sails with draft built into the panels. This is what makes paneled sails so much less versatile).

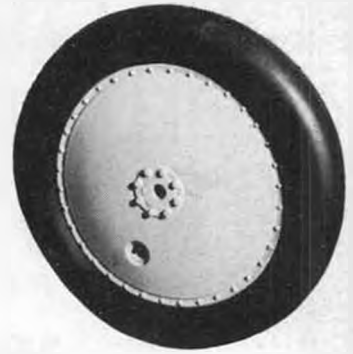
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aluminum masts are to both the sailmaker and the skipper. It is easy to match sail luff curves to an aluminum extrusion of known bending characteristics. On the other hand, we have the common case of people who want sails, and want them even before deciding what kind of mast to use, let alone what kind of shape is hiding in it!! It sounds like the sailmakers lament, and in large part it is. But it should be your lament too, for you are trying to win races with sails that are often a best guess, close to what is needed, but not as close as could be accomplished if both owner and sailmaker had better information on the spar being outfitted.

Next month, I am going to run down the list of spar materials, and the kinds of techniques available for attaching the mains'l to the mast. After that, I hope to venture into the wonderful world of fittings.

Till then, remember to send your dues of \$5.00 to the AMYA Secretary, 2709 South Federal Highway, Delray Beach, Florida 33444. Tell him I sent you, it drives him crazy. Support for AMYA will keep model yachting growing. And while you are at it, apply now for your FCC license renewal, the cost is absolutely ZERO! The FCC will only know how many of us are using our frequencies by being able to count our licenses. So with the current price, get hold of a Form 505 from your District office in most major cities, and send it in to FCC, P.O. Box 1010, Gettysburg, PA 17325 (or pick up a copy of last month's Model Builder).

**Soaring . . . . . Continued from page 31**  
sailplane (one suitable for mounting as a tie-pin). The NSS is also sponsoring a series of educational lectures on Low Reynolds Number Flight, jointly with the San Diego section of the American Institute of Aeronautics and Astronautics (these lectures being held at 8 p.m. in Room 60, Education Building, San Diego State University). On March 16, Dr. Peter Lissaman offers a lecture entitled "Birds Do It". On March 23, Dr. Paul MacCreedy, Jr. describes

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aspects of "Manpowered Aircraft". On March 30, Bruce Carmichel indicates how light aircraft performance can be improved through laminar flow technology. On April 6, Taris Kiceniuk, Jr. describes his contributions to ultra-light flight. On April 13, Dr. Robert Liebeck presents his contributions to the design of airfoils for high lift at Low Reynolds Numbers. A contribution of \$1.00 per lecture is requested from NSS members, AIAA members of students; \$2.00 for all others.

There's a lot more to say, but I'll be getting into that next month. ●

**Pylon . . . . . Continued from page 37**

standing there, I began flipping the bottle of catalyst from hand to hand. Mike watched for a bit and finally asked me if I knew how dangerous it was to do this. Well, I told him I knew that the stuff wasn't supposed to be subjected to shocks, but I really didn't know why. Turns out that Mike is their design engineer, and knows all kinds of neat information about the hazards of resins and their catalysts. He then ran through about fifteen minutes of do's and don'ts in handling these products. I couldn't absorb all of what was being said, but the words "explosive" and "fire hazard" were prominent and stuck in my quick little mind. Mike then proceeded to give

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me five pages of very technical data spelling out some of these hazards.

Please bear in mind that there are many extenuating factors which govern the susceptibility of the catalyst to being dangerous; age of material . . . as the peroxide ages it loses some of its volatility; concentration of various elements which go into making up the various peroxides used as catalysts . . . there are more peroxides used than the most common one of the methyl ethyl ketone peroxide; and Ambient temperature. I'll now point out some of the dangerous characteristics of these materials:

1. Subject to detonation when dropped from a height of more than 2 inches.
2. Has low flash point (80°F).
3. Ignites readily and burns explosively.
4. Unstable at relatively low temperatures.

Again, these factors are present under certain conditions, but if handled with care shouldn't pose problems. But, be forewarned and be CAREFUL!

Last month we left off with some advice on how to get started in Q-M racing . . . type of equipment you need, what to expect at a race, etc. Upon rereading the article a month later, we noticed several items we left out. One is



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reworked props.

While it may be distasteful to a newcomer to racing to not only have to concern himself/herself with having all the other equipment in top competitive shape, it is also necessary to have to learn to rework props into a competitive condition. Your best bet is to get hold of a Prather Pitch Gauge and follow the instructions that accompany it. You'll find the pitch gauge a great time saver. If a prop is too far out of true pitch, you're better off discarding it right from the start and spending your time on one that requires less work to make right. And although you've made sure that a prop is equal in length on both blades, and is balanced, it doesn't necessarily mean it will turn up like

you expect it too. The only way to get exactly what you want, is to run the prop and tach it and see if it's turning the rpm's you want. It may require reducing the diameter slightly, changing the pitch to a little less, or narrowing the tips slightly. On occasion, I've had to run a prop 5 or 6 times with slight reworking between each run to get it exactly as I wanted it. My own personal desire is to have my Rossi turn 22,200 to 22,400 rpms on the ground when reworking a prop, and when flying in a race, I set the needle so the engine is turning 21,600 to 21,800 rpms with that prop. Seems to work.

Another very important item we left out is your caller. This guy is very important to you, and we'll point out

some desirable characteristics to look for or to train into your caller:

1. Good vision (sees planes easily).
2. Loud voice (outshouts other callers).
3. Nerves of steel (unafraid to call tight turns).
4. Accurate Pacemaker (with new Ni-cads).
5. Ten fingers (for counting laps).

Aside from these things, he/she should be able to keep track of things during the race day:

1. When your next heat is up.
2. Current placing in contest.
3. Who you can mooch a free beer from (this trait invaluable).
4. Make sure your prop is in good condition prior to each race.
5. Make sure plane has been fueled prior to each race.

6. Make sure glo plug is in good condition prior to each race.

7. Make sure you pick up *your* transmitter for each race.

During the race, your caller should be capable of telling you what lap you're on, what position you're in, who's close to you, how much your lead is (or vice-versa), and who has cuts. It's also nice if you get to be enough of a team, and each does his job consistently enough, so that you can fly the course without having to wait for the flag to drop at No. 1 pylon. It is possible that after the second or third lap of each race, a consistent flier gets into a groove with such a rhythm that the caller need not watch the flags at No. 1, but merely counts off the established number of seconds it normally takes for the plane to pass No. 3 and arrive at No. 1, and then call, "... ready ... turn ..." Try it. it works!

### CONTEST REPORTS

August 28th and 29th found us in Greenville, Ohio, for the D.C.A.M.A. pylon races. These were the first pylon races ever held by this club, and the gods of Speed were smiling upon their efforts, as it rained all over Ohio except for this one little spot.

In Quicky 500, our old buddy, Foster Goshorn, finally broke into the winner's circle, taking his first first, followed by Bernie Oldenburg in 2nd, and Ed Nobora in 3rd.

As for QM, seems Oldenburg just used the Q-500 races to warm up as he copped 1st, Ben Martin took 2nd, and Bill Weesner walked off with 3rd.

Formula I found Speedin' Bill Hager in 1st and also with fastest time, Bob Mellon took 2nd, and Foster Goshorn did the job for 3rd.

September 19 brought us and 26 other Form I pilots back to that super "Weak Signals" field in Toledo, Ohio, for an all Form I contest. It becomes trite to say it again, but the weather was a great warm, sun-shining 80°. Five tough rounds of racing found the perennial first place winner, Bill Hager,

in the top slot again, closely followed by Wayne Yeager in 2nd, Roger Dietrich 3rd, Robert Hager 4th, and Dave Keats in 5th. The placings 3, 4, and 5 were tied in points and were settled by times. The Weak Signals handed out over \$500 in cash and also distributed merchandise prizes to all contestants. Hager (Bill) walked off with first place money of \$100, plus \$50 for fast time. Guess who bought the beer that night?!

September 25th and 26th took us to Dayton, Ohio, for the Ohio Pylon Racing Association's Fall Championship Races. Over forty QM fliers and 30 Form I pilots showed up. Unfortunately, not all of them hung around long enough for the rain to stop. "Rain" . . . that really isn't a descriptive enough word to illustrate how much water was falling. At one point, several of the fliers were all considering breaking up their planes and using the wood to start building an ark! Well, they should have waited 'cause it finally did clear off enough to manage to get all the QM and Form I heats in with several delays at various times, like when you couldn't see the No. 1 pylon through the rain drops. Anyway, QM racing ended up with . . . you got it . . . Bill Hager in 1st, John Fotiu in 2nd, and Bob Buzash (who?) in third. Form I again finds Bill Hager in 1st, with Bob Mellon flying to 2nd, and young Kevin Polzin taking 3rd.

The O.P.R.A. also keeps track of the point standings in all their association's races and handed out trophies for high point standings for the year. Bill Hager was high man in Form I, and Ole Indiana Bill Weesner piled up the points to take QM. Good flying!

Oooooops, in case you didn't know, you should send your ten bucks for NMPRA membership to:

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Whit will also need pertinent information, like your name, address, AMA number, previous NMPRA number, if you had one, and your interest (Form I only, QM only, or both).

Remember . . . left is where it's at! ●

**Volare . . . . . Continued from page 61**

epoxy the rudder to the tail boom as shown. Make the sub-rudder as shown, slip the tongue into the slot and epoxy in place. Dope it, sand it, and cover with tissue.

Cut a small notch in the upper rear portion of the tail boom, make your rudder adjusting bracket from .032 aluminum, bend as shown, and drill and tap two holes for 2-56 nylon screws. Note: Use nylon screws as they save weight. Epoxy bracket between the rudder as shown, making sure that most of the rudder throw will be to the right for a right hand circle tow. Install .032 wire hinge pin and make sure you have a

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#### WING AND STAB JIG

Cut 26 jig ribs of 1/8 balsa, using the

template on the plans. This gives a lower camber that conforms to the ribs. Cement them an inch apart to the 6 x 26 x 3/4 inch plywood baseboard and cover the top with 1/32 sheet plywood. Sig makes this plywood in large sheets. Use your favorite contact cement for this. A good drawing of the assembly is shown on the plans. When the jig is complete, cut out the center panel plans and tape them to the jig. Add a piece of plastic wrap over the plans to prevent the glue from sticking. It is now ready to use. Put the rib

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template on the jig to check that the curvature conforms to the jig, and you are now ready to start the wings and stabilizer.

## WINGS

The first thing to make is the trailing edges. Take a good piece of B grain, medium balsa and cut four strips 3/16 x 1-1/2, two should be 24 inches long and two 18 inches long. Pin them down on a flat surface and cement the 1/16 sq. spruce to the trailing edge of each piece. When dry, cut to a taper using a razor plane for rough cuts, and sand to final taper with a good sanding block. Sand the thickness to 5/32 at its leading edge. The final size should be 5/32 x 1-1/2 + 1/16. Now mark the notches for the ribs and cut to size, making sure that the pieces for the tips are notched at the proper angle because the tips are tapered. Now, using the rib template, cut the plywood ribs from 1/16 ply and drill the holes for the tubing as shown. Cut the remainder of the ribs from 1/16 balsa sheet; 14 of which will have the rear spar notch, and the rest will not, as you can see by the drawing.

Locate the portion of the rib that conforms to the camber on the jig and relocate the plans if necessary. Pin down the leading and trailing edge pieces and the lower spar, using a straight-edge as a guide. Cement all ribs in place as shown and add the top spars. Insert all

cross bracing and double glue all joints. "Hot Stuff" can be used to tack everything in place at first. Insert wing wire tubing at this time and epoxy securely. Add 1/16 sheet fill-ins between the plywood ribs and when wing is dry, remove and fill in bottom plywood ribs. When complete, sand wing, shape the leading edge, coat panel with three coats of 50-50 nitrate dope, and sand smooth. Turn the plans over to make the opposite panel, repeating all previous steps. The center panels are now complete.

The tip panels are made the same way on the jig. Using the jig will give the tips just enough washout as needed, if you make sure that you line up the plans so that the spars are parallel with the jig. Cut the ribs to size to conform with the taper and shave the outer, lower portion of the top spar so you have a tip thickness of 3/16 of an inch. Glue the top spar to the bottom spar at the tip and you will have to put in the last five or six ribs in two pieces. When dry, sand all ribs to conform to the airfoil shape. Shape the leading edge and coat panels with three coats of 50-50 nitrate. Sanding lightly between coats. Repeat all steps for opposite tip.

When all four panels are complete, using a block and straight edge, sand the 1/4 inch balsa dihedral break ribs so that you get 7 inches of dihedral, and

white glue the tips to the center panels. Cover with light tissue, cord-wise on the bottom and spanwise on the top. This will equalize the shrinking forces and keep the wing as warp-free as possible. Coat with 50-50 nitrate dope. I use about ten coats and get a real nice strong finish. Pin the panels down flat for a few days to let the dope dry thoroughly. Cement a dress hook to the top surface of each center panel as shown. This is to rubber band the wings to the fuselage and hold them snug . . . a safety item.

## STABILIZER

The stabilizer is built on the same jig as the wing. Make the rib template of .032 aluminum and cut all ribs of 1/32 light sheet. The stab must be kept super-light, yet strong. I selected all 4 lb. indoor stock, and cut all the wood from sheets, using a balsa stripper or straight edge. All wood sizes are on the plans, and the procedure is the same as for building the wing tips. Pick your wood carefully and build it light, as this will make a great difference when you start pouring the lead ballast. When you finish covering the stab, three coats of dope is enough. Add the 1/64 plywood as shown. This goes on the bottom of the trailing edge. Drill a 1/8 hole for the D.T. line through the trailing edge.

Now take a piece of 3/32 O.D. aluminum tubing, cut it to size on the rudder plan. Flatten both ends and drill a 1/32 hole on each flattened end. This is the auto rudder horn. Drill a hole in the rudder at the location shown, slip the horn through and epoxy in place. Install a light tension spring on the right side of the horn to a small hook on the tail boom. Now run the auto-rudder line through the fuselage and tail boom and secure one end to the rudder horn and tape the other end into the tow hook well. This line will go to your circle tow hook later.

Install the timer as shown, using a tension spring timer arm release as per plan. My airplane uses a Tatone D.T. timer as you can see. Solder a small piece of 3/32 brass tubing to a small diameter piece of control line cable, making sure that the tubing fits loosely between the sides of the timer release bracket. Drill a hole through the timer release bracket on an angle so that the line will slip off straight when the glider is zoom launched in the nose-up attitude. Now slip the timer release line through the bracket and tubing and solder the end of the cable to the timer release arm. Make sure that you have just enough spring tension on the timer release arm to release it when the line is pulled out. It must hold the timer off, but must release smoothly when launched. A little care here can prevent losing a good flight due to the line hanging on the glider . . . It has happened. Now run the D.T. line as shown on the plans and set the stab at a


D.T. angle of 45°. The airplane has been well tested, and this seems to be the best setting. Between this stab setting and the sub-rudder area, spinning in the D.T. is at a minimum.

Balancing the model is as follows: First install an adjustable tow hook (F.A.I. Supply). Rig up an outside auto-rudder line (temporary), and assemble the model completely. The CG should be set from 58 to 60% M.A.C. Tape enough lead to the nose to bring it up to this point. Now pour the melted lead into the lower portion of the cigar tube that we had set aside for a mold. This will enable you to slide the ballast for fine CG adjustments. Remove from the mold and place it into the ballast box on the model, sanding it for a snug fit, yet making it able to slide in or out. The nose of the lead should stick out about half an inch. Now remove it and cut a 1/4 inch off the back of the lead, and reinstall it. Check the CG. If it does not fall between 58 and 60% M.A.C., remove weight or add weight, using pennies for fine weight adjustments. You can secure the pennies by inserting a piece of tissue in the ballast tube so they won't move around. Now install the lead ballast again and tape it in place so you can move it in or out at the flying field, as you may need to. You are now ready to fly it.

#### FLYING

Test flying should be done on a nice, calm day, with no more than about 6 or 7 mph wind. Set the stabilizer at 0° incidence and test glide. Adjust the stab and rudder as needed for a nice, flat right circle glide. When this is done, set the tow hook approximately 1 inch forward from the CG and see how it tows. Use all of the 50 meter line. Adjust the tow hook and rudder until you achieve a nice straight overhead climb, and are able to "walk" the glider, making it follow you in any direction. Take your time with this and keep a record of every flight and each adjustment you make while testing. It's very easy to forget what you have done on the previous flight.

When you have accomplished what you set out to do, and the model is trim, remove the adjustable tow hook and install a circle tow hook. I used the Russian type hook, but any one will work if you adapt it correctly. Note: Don't forget to mark the tow hook location before you install the new one. Remove the outside auto-rudder line and hook up the interior one, adjust as needed, testing again for circle towing. Do not latch the hook on the first flight. Tow the model up. It should perform the same if you have not moved anything, and the tow hook is in the right position. If this is alright, set the hook release at about 4 lbs. of pull to be safe, tow it up and circle tow with it, adjusting the rudder so it circles real tight without spinning in.



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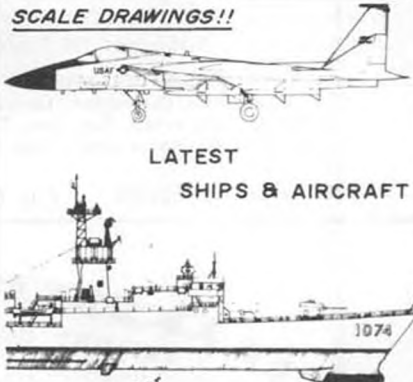
Good luck and Volare! ●

F/F . . . . . Continued from page 59

Over the past several months, I have been commenting upon the now available Sterling rubber. Some months ago, I sent a sample to Chris Matsuno for his testing — as a follow up to a report that he did for the NFFS publication, Free Flight. Just last week, I received the following report from Chris. "Enclosed are the test results of the rubber you sent me. The results were wildly variable, one motor testing out very good, one quite poor. I believe the reason for this may be the extreme variance in the thickness of the rubber. Within the 40 gram sample, it varied from .035 to .042 inches. Rubber that I have tested previously rarely varied more than .002 to .003 inches. This rubber was softer than the rubber I had previously tested in May, it took 10% more turns and still equalled the peak torque of the first sample. On the other hand, the increased turns were offset by the lower cruise torque. Tom Stark bought some 1/8 inch Sterling rubber and said it appeared to be better than the Pirelli/Filati he had gotten during the last few years.

"So the rubber is a puzzler. Quality

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control appears to be a problem, with the pitted surface imperfections of the first batch and the varying thickness of this sample. Producing good rubber does appear to be difficult, though I still can't figure out why Filati can't remember how it made good Pirelli. Maybe they just don't care.

"I hesitate to tell people to use a certain brand of rubber or not to use a certain brand, because my testing has shown how much rubber can vary. ●

Choppers . . . . Continued on page 28

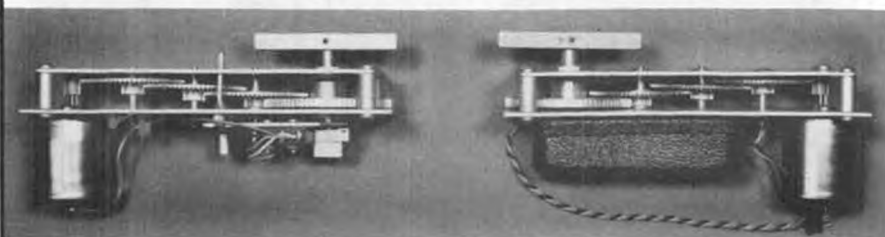
balsa blocks were fitted around the components and eventually sanded to the desired cabin top dimensions. Here, you can use your own imagination and inventiveness to produce the desired results! Cover the balsa with glass cloth for strength, and hollow it out for lightness.

Once the cabin top is finished, construction was begun on the engine box. The box is fitted inside the fuselage and slipped around until the drive gears mesh properly with the main rotor gear (cabin top in place), then cemented in place permanently. With the engine box secured, it became a simple matter to fit the cabin floor, side braces, formers to suit, etc.

Right about here, I got to wondering how to install the fuel tank, radio,



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batteries, etc., since the windows were too small to work through. At first, I thought a trap-door in the nose would do the job, but then I couldn't reach the servo linkages or glow plug. The only obvious answer was to make a door which gave access to the entire cabin. Rather than going into details, I suggest you study the pictures carefully to see how the door was framed and strengthened. Instead of hinging the door, I chose to hold it in place with two music wire pins on the rear frame, and a spring latch on the front edge (made from brass tubing, music wire, and small spring inside tube). This method has proven to be completely satisfactory, since the door cannot break off any hinges, and is removable without causing access interference.

Interior details, such as gyro, fuel tank, radio, etc., are conventional installations. Lots of room is available for seats and scale pilots if desired. The landing gear is next mounted on the rubber shock absorbers and installed in the belly of the ship. The hole in the belly is cut to fit the cooling fan and a 1/32 strip of plywood is cemented around the hole to increase cooling air flow (ducted). See photos. The horizontal stabilizer and vertical fin are made from 1/16 plywood with lightening holes cut out, then covered on both sides with 1/16 balsa sheet and sanded to a streamlined shape. Cement the balsa sheets cross-grained for maximum strength.

The final area of construction involved the tail rotor transmission. Several ideas were worked out, but in keeping with the basic idea of using available Jet Ranger parts only, the easiest way was to cement the rearmost portion of an old Jet Ranger fuselage (crashed) to the fuselage, and fill in any gaps with micro-balloons and streamline as desired. Several strips of glass cloth and lots of epoxy was used here to provide extra strength in this normally weak area. The top rear fuselage (where the rudder was supposed to go) was filled with scrap balsa and sanded to conform to the fuselage curve. The tail rotor transmission was then inserted into the tail piece and held in place in the normal fashion. The photographs will show how the tail drive shaft and pushrod were supported by a piece of plywood cemented to an existing bulkhead (on original fuselage).

A coat of primer and a coat of K&B SuperPox color plus trim, a little lead weight in the nose for perfect balance (4 oz.) and she was ready to fly . . . well, almost! After standing back and looking at the finished product, I didn't like the looks of that tall main rotor shaft sticking up like a sore thumb, so I chucked it up in the lathe and cut off about 1-1/2 inches and redrilled the main rotor mounting hole. Now, it was ready and it looked good! Off to the

backyard!

After spending only a few moments to trim it out, I lifted off gently into a smooth hover which really surprised me. The controls were extremely sensitive, so I landed and took it back into the shop to move all pushrods "one-hole" closer to the servo center. Another test hop and it was just where I wanted it. After awhile, I tried to lift it higher into the air and out of ground-effect, but she wouldn't lift above 2 feet. Only then did I remember I had used an old, wornout .61 engine for "building around" without fear of glass chips, balsa, etc. getting into it! So, back to the shop for installation of that new O.S. .61 Schneurle which I had originally purchased just for this bird. Boy, did she ever move out with that powerhouse! All up flying weight is 12-1/2 lbs., so it really gets up and goes.

Many, many flights later, I have come to the conclusion that this is about the nicest chopper I've ever flown! It is very stable, with no bad habits. Control sensitivity is exactly right, with all reactions evenly balanced to the control inputs. One more thing I like is its ability to move out into forward flight . . . it goes right now . . . much like the Heli-Baby, which is no slouch when it comes to forward flight. And no wonder, since the frontal area is very small and streamlined with that needle-nose!

I'm sure you've noticed the unusual main rotor blade tips in one of the photos, and wonder why and how? Well, this blade configuration appeared recently on the new Sikorsky S-76 helicopter and Franz Kavan wanted to experiment with the design, so we are going to see what it will do. Although we have not made comparative tests against the conventional blades, recent engineering studies have indicated that swept tip blades and droop tips (Hoerner) produce an exceptional stability in the rotor disc and smoother, more positive control reactions. And that is exactly what is indicated by our limited flights to date!

About the only thing I haven't considered is a name for my new bird. The long-line heritage is Aero Commander, the proper name of the airplane is Shrike-Commander. Add Kavan for the mechanics, and Tucker for the builder, and you can come up with such names as Tuckommander, Tuckavander, or better yet (in all modesty) "The Kavander"! Maybe "Shrike Kavander" . . . or maybe . . . well, maybe later, 'cause I gotta go to work! BCNU next month. ●

Cloud Chaser . . . Continued from page 25

at your favorite Polynesian restaurant.) Dihedral is obtained by raising one wing tip 6-1/2 inches off working board when other wing panel is flat on board.

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*First precut the surfaces which will touch, then glue the two panels together. Cement the two center ribs together and glue in place. After drying, again coat joints with glue.*

*While the wing is drying, bend the two wing clips from No. 14 wire to the exact shape shown on the plans. After wing panels are glued together, precoat wing spars where clips will be attached, then cement clips to wing. Bind clips to spars with fine thread and coat with glue. Clips should fit motor stick snugly, but not so tightly that wood is cut deeply by wire.*

*Using tissue, cover the top of the wing, one panel at a time, with the grain of the paper running parallel to ribs. A good wing-covering method is to start with a piece of paper slightly larger than the panel which it is to cover. With dope as an adhesive, attach paper to center rib. Then work slowly outwards towards the tip, a few inches at a time, applying dope to leading and trailing edges with a small artist's brush, smoothing out the tissue with the finger tips.*

*The landing gear, which protects the propeller as well as permitting R.O.G. takeoffs, is also bent from No. 14 wire. Wheels are 1-1/8 inch circles cut from 1/8 inch thick sheet balsa. Cut two circles for each wheel, and after pre-coating, glue together with grain of wood running opposite, as shown. Washers are glued to both sides of each wheel, then wheels are slipped on wire landing gear*

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and ends of wire bent up. See illustration.

*Instead of cementing landing gear to motor stick, thin rubber wrapped around the wire and stick holds landing gear in place. This permits gear to be quickly removed for hand-launched trials. (And also for slipping wing into position on stick).*

*Final phase of construction is one of the most important. It has been wisely worded: a propeller can make or break a model. The prop for this cloud chaser is carved from a balsa block 1-3/4 x 1 x 12 inches, in the four steps illustrated, or a 12 inch, machine-cut partially-completed prop may be finished off and used. It is quite possible that some*



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Required Materials (Balsa Wood)

**Half-A . . . . . Continued from page 55**

I'd like to point out that the world's champion lightweight radio is still ACE's pulse proportional rig. These radios weigh as little as 2.0 ounces with the new 100 mah. battery pack. ACE just updated their pulse systems by making them available on the 72 mc bands. In addition to the light weight, the ACE pulse system is the least expensive radio currently in production.

Let's see, 2 ounces for a radio, 1/2 ounce for a Tee Dee .020 engine, and 1 ounce for the airplane. Hum, I have a 13 foot ceiling in the living room. I wonder if . . . ?

Back to reality! Next model is a kit you can get for yourself. This free flying bit of nostalgia is the 1930's Longster from R/N models. At 36 inch wingspan, it needs only an .020 for power. Naturally, you go the tissue and dope route to finish this kind of airplane. Performance is just right for lazy calm evenings at the local school yard, if you limit the engine run. By the way, don't forget that you can put some wood blocks inside the fuel tank of a Pee Wee .020 to limit capacity. In scale flying, the accuracy of a fuel shut-off timer is unnecessary. Another alternative is to use a medical syringe to accurately measure the fuel you put in the tank.

Since I have a beautiful scratch-board rendition to show you, let's talk a bit about the available engines. Cox makes four engines with displacements smaller than .049. Most powerful is the Tee Dee .020. Although it isn't a happy combination, you can swing up to a 6x3 prop with this size power plant. Ideal prop seems to be about the 4-1/2 x 2 grey (glass-filled nylon) "Competition" prop from Cox. The engine is provided both with a tank mount and radial firewall mount for use with external fuel tanks.

The second Cox engine is the Pee Wee .020. This engine has reed rather than rotary intake timing, so its easier starting and less expensive, but as a result, produces less power than the Tee Dee.

Third engine is again a Pee Wee, but this one is the Pee Wee R/C. Speed control is achieved by use of a rotating exhaust restrictor. Idle is smooth and transition excellent.

Fourth, and smallest production engine made anywhere, is the Tee Dee .010. It's so small that I have one mounted as a tie-tac! This little monster puts out a ridiculously large amount of power by turning 28,000 rpm with its standard prop. In years gone by, I have VTO'ed 24 inch span free flights powered by the .010. Climbed straight up all the way at 3 ounce weight, too!

At least one small diesel is currently



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builders might make use of both types of propellers and compare performances.

In either case, the prop shaft is bent to shape shown from the same size wire as the other fittings. The shaft is cemented in place and several flat washers or a single ball-bearing washer is placed between the propeller and thrust bearing.

For trial flights your cloud chaser may be powered with eight strands (four loops) of 1/8 inch flat rubber which has but little slack. After adding rubber, adjust the wing on the motor stick until a smooth glide is evident . . . then move the wing clips back about 1/16 inch and hand-wind the motor to a double row of knots.

With this power, the model has been found to rise-off-ground or climb from the hand and turn in creditable flights. If model stalls in flight move wing back slightly; if takeoff is slow try moving wing forward.

Should the eight strands of rubber prove insufficient to send the ship skyward in a suitable climb, add extra loops until a fast, even climb is obtained. Fully wound, with a right-hand prop, the craft may dive in on the left wing. To remedy this, increase the incidence of the left wing by bending up the leading edge and bending down the trailing edge. This is best done by bending the wire clips with pliers instead of breathing on wing.

Known as "wash-in", this adjustment is one of the first to be found in the expert's bag of tricks.

When the cloud chaser is correctly adjusted it will be apparent that the model is a high and stable flyer; so unless you're out in the wide open spaces, it may be advisable to have the plane slightly under-powered. Remember that a plane in the hand is worth two in a tree.

When good flights become "old stuff", try experimenting with various sizes of rubber and loop lengths. Then fly the model with larger propellers and compare the duration of hand-launched with R.O.G. flights.

But either R.O.G. or hand-launched . . . you're bound to like this big sturdy flyer.

**Required Materials**

- (1) 3/8 x 1/2 x 28 inches
- (2) 1/16 x 3/16 x 18 inches
- (4) 1/8 x 3/16 x 18 inches
- (2) 1/8 x 1/16 x 18 inches
- Half sheet of 1/20 inch sheet
- Half sheet of 1/16 inch sheet
- Half sheet of 1/8 inch sheet
- Block 1-3/4 x 1 x 12 or (12 inch machine cut prop blank)
- 3 ft. No. 14 wire
- Large thrust bearing
- 14 ft. 1/8 inch flat rubber

available in the U.S. Hobby Hideaway, in Illinois, imports the D.C. Dart .036 from foggy old England. Diesels are not as highly powered as glow engines, but they have gobs of low end torque to swing large props. Improved propeller efficiencies can actually allow you to haul a larger model with a less powerful engine.

Two other odd facts about diesels; diesel fuel doesn't eat nitrate model dope, so no fuel proofing is required; also, their fuel economy is about twice as good! In days gone by, diesels have been produced commercially down to .008 cu. in. size!

That's it for small engines, here in the U.S., but you might find an old K&B "infant" .020 or OK Cub .027 engine if you hunt around a bit too. These last two have been out of production for many years.

Next model, Skyriders, is one which was published in (blush!) a competitive magazine. This model was sort of an RCFF, as it only had rudder control, and the structure was extremely light. Soaring ability was excellent, but it was over-powered with the Tee Dee .020 on it! At the time it used the then smallest radio, Cannon's "Tini-Block". Now you could go even lighter on the R/C gear.

Since it was a light structure, covering and finish was Japanese tissue and dope. In fact, that's only the third model I have tissueed in the last 10 years! I love those plastic films.

Final model for the month comes from Flyline models. It took 1st place at the 50th Nats (1976) in Senior FF scale. Power was a Cox Tee Dee .010 engine. Flyline specializes in well thought-out models, but ones which require some real building. Ribs and formers are printed, not diecut, and you build up the scale details such as cylinders yourself. None of the construction is difficult, but it is a project which requires that you genuinely enjoy building models in addition to flying them. Incidentally this model flies great with rubber or CO<sub>2</sub> power too.

If some engine collectors would please send photos of odd or old 1/2A engines, and I'll try to do a "hysterical and historical" engine column in a few months. If any of the speed and racing people are out there, I'd like to hear about special and highly modified engines too.

See you next month, Northrop willing and the Creek don't rise. ●

**Remotely . . . . Continued from page 19**

be judged at a distance, and yet, workmanship is scored! If, as you say, the distance for judging was *at least* 20 feet (we go for 50) a modeler could detail to his heart's content. However, it would get him nowhere in Sport Scale competition.

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otherwise streamlined and slick appearance that is characteristic of most of these types of model. On tethered race cars, the pipe makes them look like some kind of monstrous bus with a lethal stinger sticking out the back. On boats, a torpedo launching tube. They turn C/L speed models into stovepipes with wings. As for pattern ships, the usually underslung pipe looks like some kind of skid for landing on snow or ice.

Some years ago, when writing for M.A.N., we facetiously suggested that it would be nice if the engine muffler and exhaust pipe could be run down through the fuselage of a model and out at the tail post, like a jet outlet nozzle. This would keep the plane nice and clean while flying, and then, at the end of the day, you could just stick a cork in the outlet nozzle and go home . . . no messy clean-up.

Well, it seems that Swedish modeler, Bengt Lundstrom, has brought us a step closer to that "Pipe Dream" with the latest version of his "DFH-18" Pattern Ship (June, 1976 Model Builder). In his DFH-18 construction article, he mentioned that the big canopy could hide a big silencer or pipe. Now he has actually done this with his 1977 "DFH-19."

We have included some pictures of Bengt's DFH-19, equipped with a Mini-

ment part of that same breath. We don't believe that unsatisfactory rules turn 80 to 90 percent of your scale modelers away from competition. We feel that, just like the majority of modelers we have known over the years, at least 80 or 90 percent of them couldn't care less about the competition rules. They are live-and-let-live *hobbyists* who build and fly, or maybe just build . . . or maybe just fly . . . for their own pleasure and relaxation. Ask your hobby dealer, distributor, and manufacturer what types of model kits and engines sell the most . . . it's the non-category sport model and sport engine. Even a high percentage of the all-out competition kits and engines are purchased by modelers who have no intentions of entering competition. An exception would be Formula 1 and Quarter Midget pylon racers. Not many of these appear at Fun-Flys or informal weekend gatherings!

Anyway, our point is, that no matter what percentage of the modelers you manage to please with a set of competition rules, the great majority is *still* not going to come a'running to the next contest. To a born competitive modeler, building or buying a model airplane is a *means* to an end. To a hobbyist, building and flying models *is* the end!

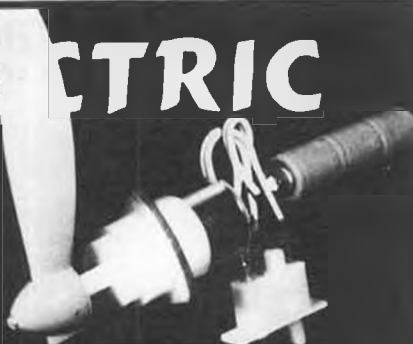
### PIPES AREN'T BEAUTIFUL!

"The Pipe" is becoming more and more common on all-out competition models, but it brings with it an unsightly protuberance that mars the



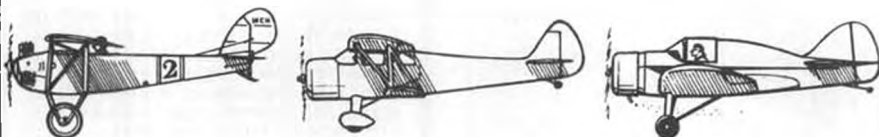
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vox Conex pipe fitted to his OPS Speed 60 RCA, with rear intake and exhaust. He says there's even room for the larger Webra pipe.

If you come to the World Championships for R/C Aerobatics in Springfield, Ohio, June, 1977, you'll get a first-hand look at this ship, as Bengt has won top position on the Swedish team using the DFH-19. The other team members are Kenneth Holm and Benny Kjellgren. Benny is a veteran U.S. visitor, having flown in the Las Vegas invitational for the past 3 years.

WRAM, WRAM

THANK YOU MAM!

The second big trade show of the year (following Dallas) took place in White Plains, New York (about 50 miles North of N.Y.C.), on February 25, 26, and 27. Put on by the Westchester (County) Radio Aero Modelers, the show was again ably managed by Frank Devore and his many club member helpers.

Friday, as usual, was set-up and dealer day combined. If the dealer showing was to be any indication, the show would have been a flop. On the contrary, from the moment the doors opened on Saturday morning, exhibitors were deluged with spectators right on up to closing time at 6 p.m.

To take nothing away from the pulling power of the show, the main reason for the record crowd was the weather. The New York area had its first decent day after weeks and weeks of cold, snow, ice, wind, etc. Just on Thursday night, after circling New York for over an hour, we landed in pouring rain, and then had to drive to White Plains in rain so dense that with the wipers at full speed, we could not go over 35 to 40 mph. Stalled cars, knocked out when going through deep water too fast, lined the edges of the road. In fact, Frank Devore was concerned that the modeling spectators would head for the flying fields after months of non-activity, but such was not the case.

Sunday was a repeat of Saturday, with solid spectator activity all day. We seldom got out of the MB booth. We must get personal for a moment, in order to explain our lack of coverage of new products introduced at the show. Just two weeks before the show, Anita's father passed away. She took Belinda (our 3-1/2 year old Half-A scale model) with her to Puerto Rico to settle affairs and met us in Florida (where we visited this editor's mother), before flying to New York. Arriving in N. Y., we found that Anita's sister living in Elizabeth, N.J., had a last-minute emergency and could not keep our daughter as planned... so... guess who spent two days in the Model Builder booth along with Doug Pratt, Pat Patton, Anita, and this writer! Oh well, we'll cover the new items following the Toledo Exposition, which is

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## INDEX TO ADVERTISERS

Ace R/C Inc. . . . .	67
Aero Modeling Enterprises . . . . .	74
Astro Flight Inc. . . . .	72
Bill's Miniature Engines . . . . .	64
Brice Machine Specialties . . . . .	84
California Hobby Distributors . . . . .	75
Cannon Electronics . . . . .	68
Carr Sails . . . . .	98
Century 21 . . . . .	80
Classic Era Model Plans . . . . .	79
Cloudbuster Venture . . . . .	79
Cox Hobbies . . . . .	74
Jim Crockett Replicas . . . . .	92
D&R Products . . . . .	92
Davis Diesel Development . . . . .	77
Du-Bro Products . . . . .	85
FAI Model Supply . . . . .	93
Fisher R/C . . . . .	92
Flying Scale Models . . . . .	90
Flyline Models . . . . .	88
Fox Manufacturing Co. . . . .	73, 76
Fusite Division . . . . .	89
Gas Model Products . . . . .	80
Carl Goldberg Products . . . . .	65
Golden Age Reproductions . . . . .	93
Gram Cracker Plans . . . . .	86
Hobby Hideaway . . . . .	86
HRE, Inc. . . . .	96
K&B Mfg. Co. . . . .	66
Kraft Systems . . . . .	3
Kustom Kraftmanship . . . . .	78, 102
Larry's Hobby Supply . . . . .	77
Leisure Electronics . . . . .	83
Lube Specialties . . . . .	79
MAC Show . . . . .	94
David Mainwaring . . . . .	99
Majestic Models . . . . .	97
Micro Models . . . . .	84
Midwest Model Supply . . . . .	64, 68
Millcott Corp. . . . .	95
Model Builder Binders . . . . .	78
Model Builder Products . . . . .	82, 3rd Cover
Model Rectifier Corp. (MRC) Cover 2 and 4	
Walt Mooney Peanuts . . . . .	102
Sid Morgan (Vintage Plans) . . . . .	102
Steve Muck R/C Boat Supplies . . . . .	88
Morrison Repla-Tech . . . . .	97
Pacer Industries . . . . .	86
Pas-M-Co . . . . .	101
Peck-Polymers . . . . .	97
John Pond OT Plans Service . . . . .	95
Probar Design . . . . .	98
Proctor Enterprises . . . . .	87
R/N Models . . . . .	101
Satellite City . . . . .	91
Sig Manufacturing Co. . . . .	1
Special Edition Plans . . . . .	100
Sterling Models . . . . .	69, 70, 71
Strick's Enterprises . . . . .	87
Su-Pr-Line Products . . . . .	76
Top Flite Models Inc. . . . .	2
Tyro Model & Supply . . . . .	100
Vintage Aero . . . . .	101
VL Products . . . . .	102
Vortex Model Engineering . . . . .	81, 99
Wardcraft Marine . . . . .	100
Williams Brothers . . . . .	93

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next on the circuit.

One final note, while we're on the subject of trade shows. Last month, we announced the new International Modeler Show to be held in the plush Los Angeles Convention Center, in 1978.

This show, to be for modelers only . . . no crafts or railroads . . . was originally scheduled for March 10, 11, and 12, but because of the tight squeeze for exhibitors who would have to hit 3 shows in opposite parts of the country

within a 5 week period, it has been re-scheduled for April 28, 29, and 30, 1978 . . . NOT THIS YEAR . . . It's 1978! (Someone called on March 12 to find out why there was no model show at the Convention Center!)

### Workbench . . . Continued from page 8

propellers, models and much more, that because of space limitations could not be placed on display at the Mall facility.

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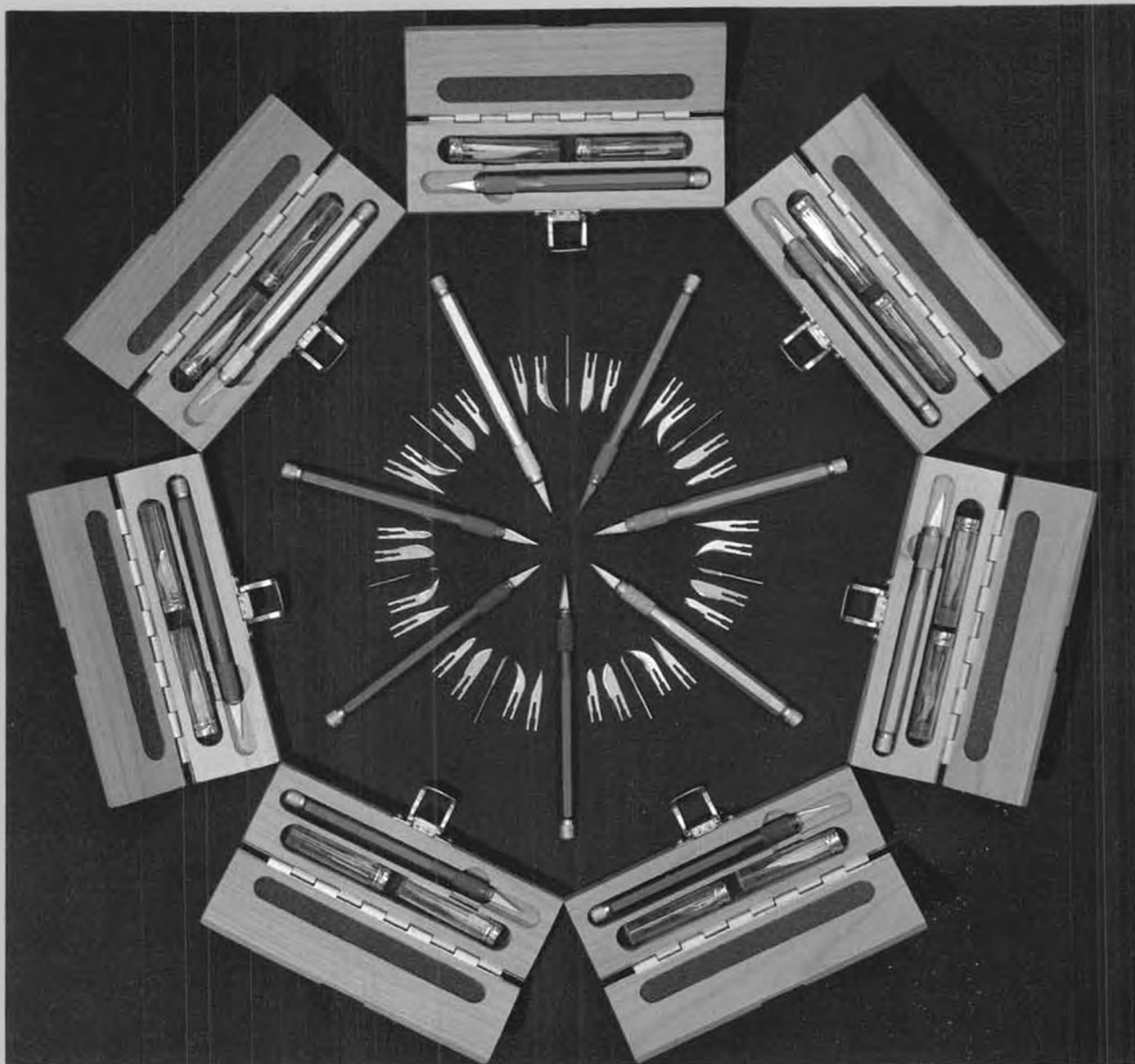
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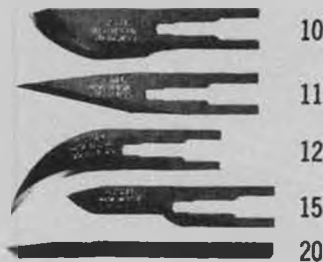
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<sup>1</sup> Comparison of features based on R/C systems purchased November 1978

