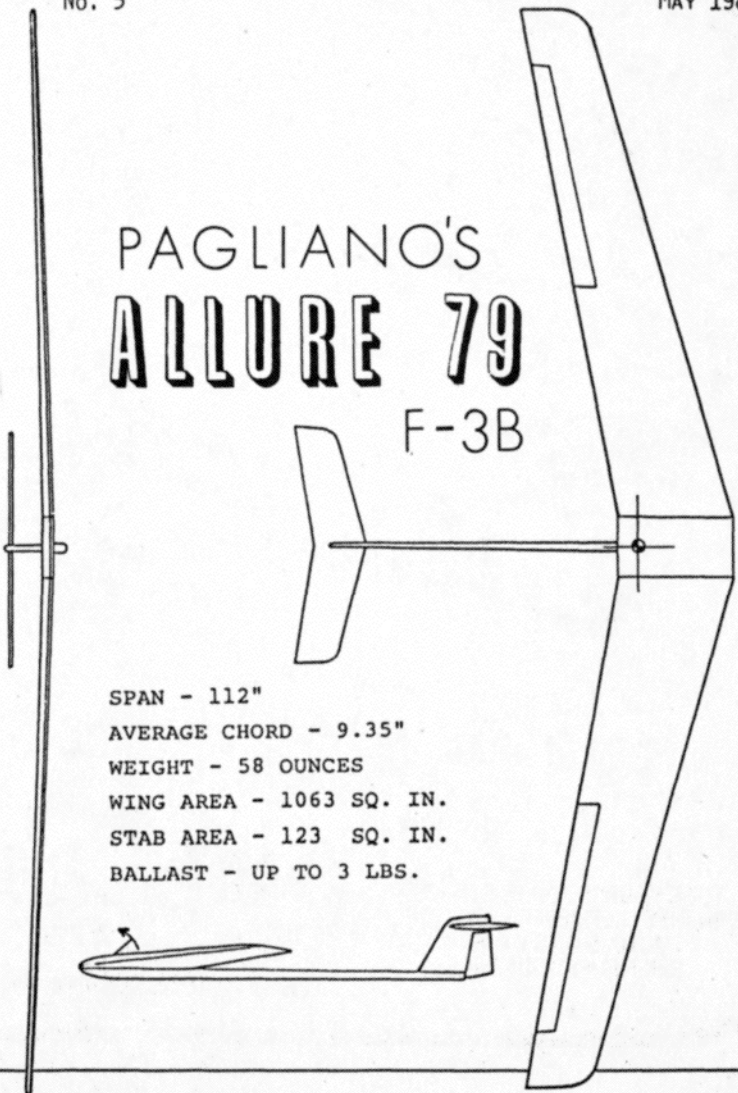




May 1986

Vol. 3 No. 5

# PAGLIANO'S ALLURE 79 F-3B



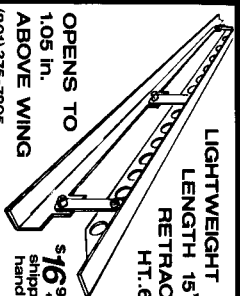
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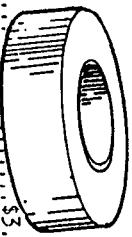
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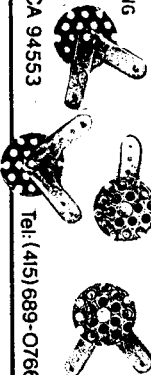
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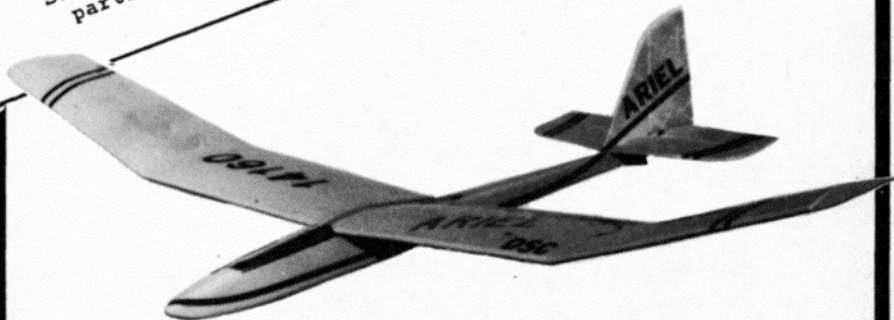
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"May marks the beginning of really good soaring weather in the Northeast, and I'm looking forward with great anticipation to having several sailplanes to fly this season: the WINDSONG, my own HY-BIRD, a new 2-meter still on the drawing board, and maybe a small hand-launch sailplane...something like the new ARIEL being put out in kit form by Ted Davey.

"From what I've been hearing over the winter months, many of you plan to take the field with some brand-new sailplanes, many of which are original designs. Most of these contain carbon fiber, Kevlar, foam, and glass in various quantities and will be measurably superior to what you flew in 1985.

"One of the things that you've asked me for - but I've not received from any of you - is information about a GOOD, simple, inexpensive, and portable WINCH. If any of you have such a device that you have designed and built yourself, please let me know. Better still, write it up for me with sketches and photos, and I'll see that it gets into RCSD.

"I think you know that I have been interested in FLYING WING designs for a long time; and I'm sure many of you have a similar interest, yet we don't see much publication of ideas, concepts, hardware, three-views, or anything else about these potentially fine soaring machines. If you have been doing some flying wing research and building this winter, please let me know. I'd enjoy presenting your results to the rest of the readers. Take a look at the photos sent in by Lee Murray.

"Our subscribership is up to about 650 at present, and growing steadily each day. Some of the best responses to date have come from the renewal package sent out by the AMA, in which RCSD has a coupon. Frankly, I'd like to see us grow to a subscribership of several thousand this year...not very likely, but we're gaining on it. It has been estimated that there are over 25,000 sailplane pilots out there, and I see no reason why we can't have at least 10% of them. If any of you have some good ideas of how to reach these potential subscribers, let me know. Only YOU can sell them effectively, by word of mouth, on RCSD. If I try to do that, it's just put down as advertising 'hype'...but if YOU do it, others will listen. Many of you have been responsible for one or more extra subscribers beside yourselves, so THANKS. Keep up the good work!

Happy Soaring, *Jim*

AN "ALLURE"-ING COVER GIRL FROM ITALY.....Fred Cotten

"ALLURE 79" was flown by Italian team member Pagliano in the 1979 World RC Soaring Championships held in Imay, Belgium. Although the sailplane did not place at the top of the list, it attracted a lot of attention for its unusual, low-drag design. The "fuselage" is merely a long, slim tail boom - sufficient to hold the tail in a correct location - and the radio gear is enclosed within a 'fat' wing center section. The radio access hatch is hinged and serves as a spoiler when deployed on landing. The wings are removable, leaving the center section/tail boom as one unit, making transportation relatively simple. A minor difficulty comes in launching: where do you hold it? A similar sailplane, if not in fact this one, had a pair of hinged bottom doors, spring loaded to close in flight. They opened for launch to expose a hidden handle by which the sailplane can be held in launch position! In case anyone would like to build their own ALLURE, I will sell plans for \$5.00. You can contact me at 6632 Banbury Road, Jacksonville, Florida 32211.

\*(If it were me, Fred, I think I'd try holding the fuselage/tail boom immediately behind the wing, a hand's width aft of the C.G. - Jim Gray).

INSURANCE IS A RISKY BUSINESS.....from THE FLIER\*

"This was received from the AMA regarding our insurance coverage; please read it and call them if you have any questions.

'The recent crisis in liability insurance has resulted in some substantial changes (emphasis mine - JHG) in our liability coverage for clubs and members. We had to accept the only viable proposal for coverage--an aviation policy that restricts coverage to model aircrafts & other limitations. Please note: this is now in effect for 1986.

1. Model boats and cars are no longer covered. Previous policies provided for these as incidental to model aircraft. The current policy does not.
2. Libel, slander, defamation of character and similar offenses (personal injury are no longer covered. (sic.)
3. Products liability is no longer covered. The policy does not provide coverage for claims resulting from alleged product's defects in any manufactured and sold, resold, or given away by AMA members and clubs. This exclusion from coverage may include not only model aircraft, parts and accessories, but also a model built by a member and sold or given to another person.

The policy provides broad protection for AMA members, clubs and

site owners for accidents relating to most club activities, and for flying activity of individual members. However, it is important to be aware of the policy limitations above.

AMA sponsors a Homeowners Insurance Policy program using Fireman's Fund. Their individual policy is especially designed for AMA members and includes some special liability protection which is broader than most Homeowner policies. For information regarding this insurance policy, call toll-free: 1-800-652-4829."

\* Newsletter of the Mid Missouri Modelers, April 1986.

Note: I'd suggest that anyone wishing further clarification of insurance coverage through the AMA call or write AMA at their National Headquarters. Liability is something we are all subject to whenever we exercise our right to fly, because many people nowadays are exercising their right to sue. Let's be sure we're all properly covered and protected for our own peace of mind. JHG.

ERRATUM/ERRATA : Our good friend Martin Simons wrote a letter recently in which he took issue with the induced drag coefficient formula (MARCH 86 RCSD, page 14): "Your formula for induced drag needs adjustment! If the factor 'K' is to be on the top line, it must be greater than 1 (not 0.9). A representative figure would be 1.05 up to 1.12 for a rectangular wing planform. If you choose to put the efficiency factor on the bottom line, then it can be less than 1; say 0.95 or 0.9 for a rectangular wing. If you put K=0.9 on the top of the dividing line, you are claiming planform efficiency greater than 100% - impossible!"

Thanks, Martin for the 'eagle eye'...JHG.

WING TIPS.....Inland Soaring Society\*

\*Newsletter, Vol. 4, No. 3, March 1986 - Editor, John Duino.

"Spar Selection: With so many newcomers to the sport of soaring, I thought it prudent to bring up a subject I discussed way back in August 1981 - the subject of spar material selection. Some of the 'spruce' or 'hardwood' spar material furnished with some kits, and sold in some hobby shops is neither spruce nor hardwood; it is pine. Now, there is nothing particularly wrong with pine as spar material, but if you are looking for strength, spruce can be better. I say 'can' because t'ain't necessarily so. A good grade of pine is better than a poor grade of spruce (and heavier...JHG). The most important factor in spar strength is grain run-out. Wood will fail in shear along the grain lines. The ideal would be to have the grain lines running the full length of the spar. Poor strength woods have the grain lines running sharply off the edge, or undulating 3

from one edge to the other. These spars are weak in both compression and bending. Next time you buy spar material, or a kit, don't just sight down the spars to see if they are straight; look at the grain patterns."



**Note:** (The number of grain lines per inch is also a factor in the bending strength of the wood. In aircraft spruce, the inspectors like to see up to 20 grain lines per inch! You won't often see that quality wood available for model use...but next time you go to your local lumber yard, look over the stair railing or ladder stock and select a nice piece with straight, even grain, and more than 10 grain lines per inch, with little or no run-out in a yard or two. Buy this, take it home and carefully saw it into a nice package of spar stock. Store it flat, with air freely moving around it, and at a preferred low humidity. Pine or Douglas Fir is also good aircraft wood, but tends to be heavier for a given thickness and length than its spruce counterpart. The extra weight would make no difference in spars for the average model...but if you keep the same size as called for in spruce, the spar will be slightly weaker. When preparing your spar stock for gluing, standard aircraft practice is not to sand it, because the wood picks up small particles of the abrasive, and produces a less than good joint. Instead, use a scraper, such as a piece of broken glass, and be careful. Scraping leaves the wood surface in ideal condition for gluing. JHG.)

HIGH START RUBBER TUBING.....Lee Murray

"Dear Jim: I thought your readers would like to see some information on rubber tubing. This came from SUPERWINGS and could be termed heavy-duty or unlimited class tubing. I made some tests of force vs. extension (stress-strain) and plotted a curve (see Figure). I was a little surprised to see how different the extension curve was from the relaxation curve (magnitude of the hysteresis). The curve I included is a replot of several curves scaled to use conditions. There is one extension curve to 350% extension, and three relaxation curves from 350%, 300%, and 250%. A new sample was employed for each curve. These curves show that IT IS POSSIBLE TO STRETCH THE RUBBER FURTHER AND REALIZE LESS FORCE FROM IT THAN YOU WOULD HAVE OBTAINED AT A SHORTER EXTENSION DISTANCE!

"I have been thinking about some of the implications of this observation and have listed a few. The first is yours from our telephone conversation:

1. If you want a good launch with a low wing loading, first over-stretch the rubber and then walk back to a shorter stretch just before launch.
2. If you want plenty of launch force for a heavy sailplane, DON'T over-stretch the rubber.
3. The loading on your sailplane is less than you think after release from your hand (wind effects not considered).

"Another observation from the tests was the effects of over-stretching the rubber are not as bad as suspected. While a 300% extension is standard for this tubing, a 400% (400 foot) stretch doesn't damage the rubber significantly. The extent of damage to tubing with this degree of over stretch might vary widely with the manufacturer, grade, and age of the tubing. The tests were made on a tensile tester using a 2" jaw span, and a rate of extension and relaxation of 10" per minute. The grips were line-contact grips."

Well, Lee, all I can say is that it's best to take all this information into consideration when using your hi start, but don't forget that TEMPERATURE will make some difference. Also, I'd recommend that hi start tubing be kept clean and grit free by wiping down after a day's use. Powder it with some talcum powder after cleaning it and before storing it. Put it in a cool dark place to store it, and keep it out of sunlight when not in use. Nicks and scuffs will appreciably shorten the life of your tubing, and will also cause stress concentrations at the location of the defects...JHG

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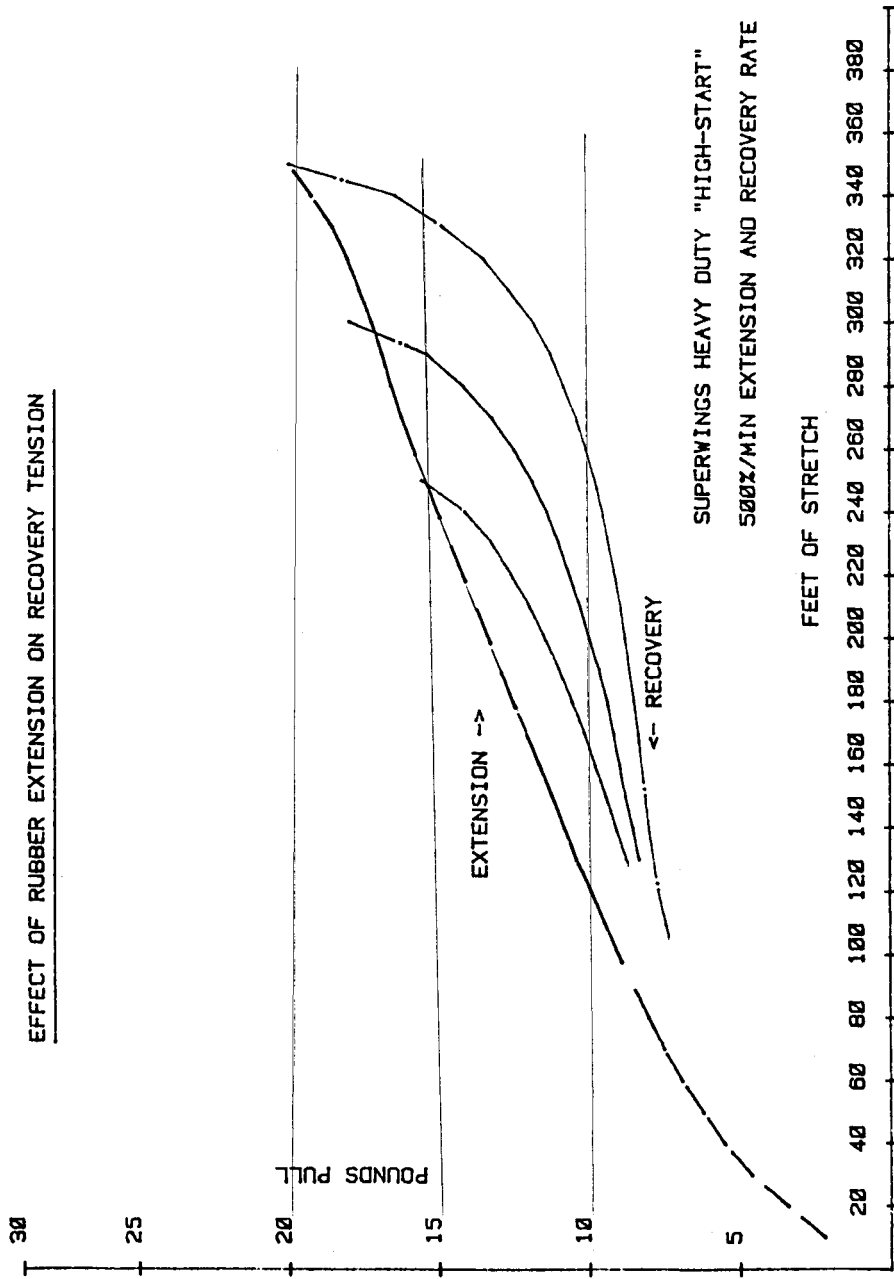
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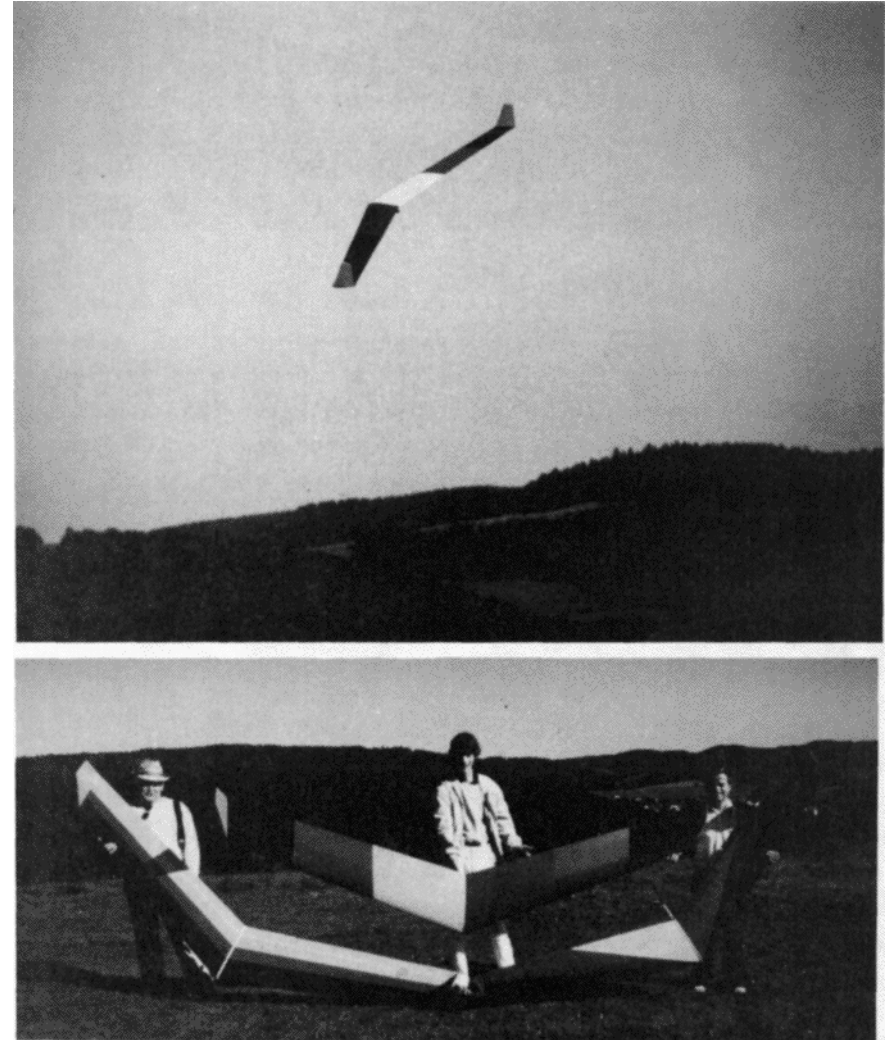
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MORE MURRAY.....ICARUS PROGRAM

"On another topic, I wanted to tell you about the ICARUS/IARUS program which recently got top billing in the German

publication MTB 13. The engineer who put the computer program together came to visit LJM Associates last year, and I now have the program for APPLE II and COMMODORE 64 computers (in ENGLISH) with supporting materials. Also, I have their latest work for the design of flying wings. Here is a photo of their beautiful creations. (The three photos sent were in color, and absolutely gorgeous. Sorry RCSD can't do justice to them in black & white. The colors are rainbow colors...some spanwise and others chordwise.





"What I could use from your readers is an indication of interest in the FLYING WING sailplane design program. If there is sufficient interest, I will translate the program as was done for the ICARUS program, and make it available for \$25. According to the programmer, Rob Klopp, it is even more sophisticated than the ICARUS program! Please let your readers know about this, and send me any feedback you may receive."

Readers, if you are interested in such a program, please let RCSD know, and let Lee know. You can write to him at 1300 Bay Ridge Rd., Appleton, WI 54915.

-----  
 Once again, I'd like to mention that the MTB books are available from COUNTRY HOBBY SUPPLIES whose ad appears in this issue. Rose and Otto Bandman are excellent folks to deal with, and they carry a HUGE stock of model-building supplies, books, and those hard-to-find GERMAN kits you've been looking for. You may also want to consider that it MIGHT cost less to buy the things you need from CHS because of the US-CANADIAN currency exchange rate, even taking into account shipping costs. I haven't checked this out myself, however.

For most purchases, you will probably want to buy in the US, but for those rare and unusual items, Check CHS. When you order an MTB book or a German sailplane, for example, THAT'S the time to add other items to your order. At least it seems that way to me

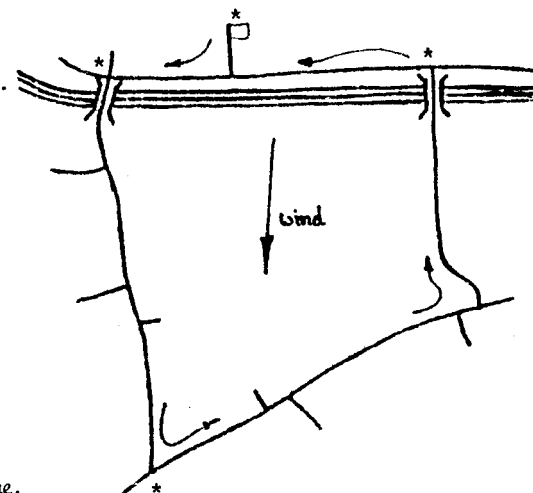
## The First Part II. International Cross Country

John Lightfoot

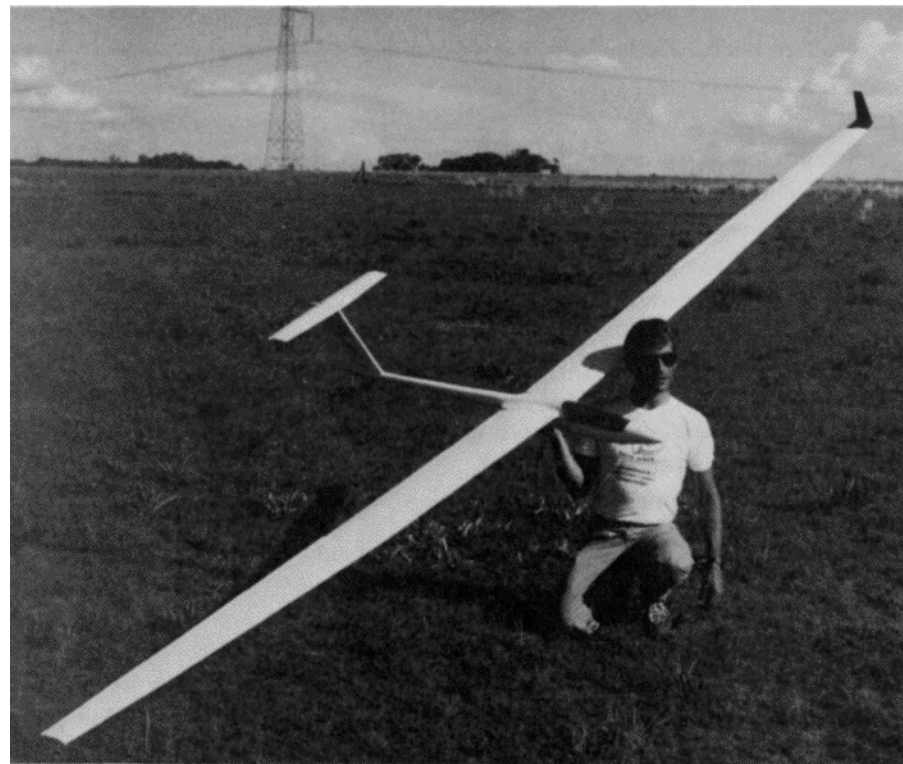


WEDNESDAY      Task Three      44,5 km

A slightly longer task was set than the previous day but only the top three covered any useful distance. Charles Rudnick made it all the way round, after some tense moments at low altitude on the distant legs. The question was, would Larry be able to complete the course in a better time?



CHARLES RUDNICK ... placed 2nd  
 a/c has high aspect ratio, flat  
 wing, ailerons and tip winglets.  
 Seems based on stretched F3B machine.



LARRY JOLLY ... placed 1st with very stable "Comet".



Charlie's time was just under 92 minutes (the recorded time is different but I was official timer, and I know how the error occurred.) and we worked out when Larry had to come in to record better score. 20 minutes late, Larry was seen cruising gently down the home straight, no headlights, no fanfare ... what's up? Heading for the finish gate, the Comet pulled up and circled, popped spoilers and made as for finals ... what is going on? Then, as Larry landed, 10 metres short of the finish line, we realised what was happening. A loophole was being broached!

With a finishing time of nearly 115 minutes, Larry could expect a score of  $\frac{92}{115} \times 1000 = 800$ , but if he elected not to finish, his score would be  $\frac{44,49}{44,50} \times 1000 = 999,8 = 1000$  although for some reason the official score was given as 999 ... all other scores were rounded up.

It was clear that Larry was well aware of the wording of the rules and in particular the scoring rules, which were cumbersome **10** to say the least. But there was a worse possibility! Just

suppose someone had staggered round the course and finished in 180 minutes ... double Charlie's time? Then, based on the score of the slowest finisher, Larry's score would have been halved ...  $\frac{44,49}{44,50} \times 500$ .

Charles Rudnick	44,5 km	91'49"
Larry Jolly	44,5 km	114'36"
Frikkie Roos	28,1 km	82'03"
Arnold Paikin	6,7 km	24'00"
Craig Thompson	5,5 km	17'34"
Bruce Thompkins	3,2 km	12'19"

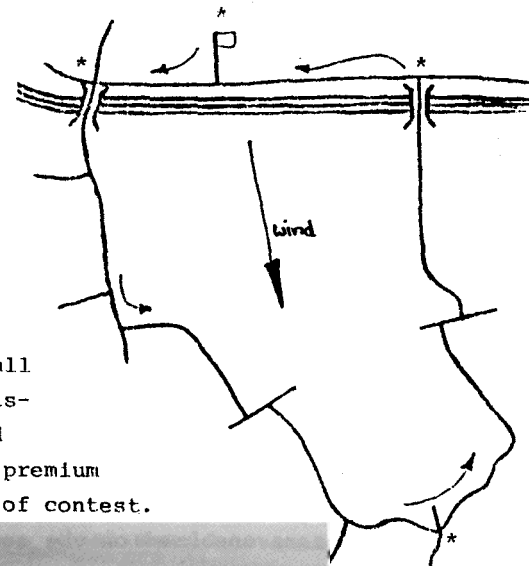
THURSDAY was declared a rest day, so while some caught up on much-needed sleep, others paid a quick visit to Sun City.

FRIDAY      Task Four      51,7 km

On the 30 km drive out from Pretoria to the flying field, it was clear that this was to be the day ... the sky was dotted with little clouds and there would be lift under all of them!

The course was the longest of the meeting and the upwind leg would be a real test.

The sky was soon filled with gliders and the pack headed off down the course. Dead lucky, our Sagitta (reserve, with SB-XC now defunct) shot from thermal to thermal at a rate which left the onlookers amazed, but it only lasted 20 km. A small aircraft is a distinct disadvantage when height and visibility are at such a premium as they are in this type of contest.



Frikkie Roos launches

Charles Rudnick and Frikkie Roos landed just past the downwind turn point but Larry Jolly looked as if he might fulfill his expressed desire of completing every course set. Then the Valley of Death took on a new meaning for him! Watching from a vantage point a kilometre ahead where we were waiting for him, we saw the Comet slowly tuck its nose down, flutter a wing and vanish into a mealie field.

The story is best told from what we learned later --- Larry suddenly found the Tx meter reading right down in the danger area. He was looking for somewhere to land when one of his crew remembered the spare battery pack they had ... could it be exchanged quickly. Andy took over the sticks while the rest started dismantling the back of the Tx.

"... I have no control! ...", frantic scrambling in the back of the Tx ... "Still no control --- going down!" ... reconnect the other battery ... "Still nothing ... too late!". They sat back and looked at each other ... what went wrong? Then one of them noticed a little black box lying in the corner of the bakkie. It was the RF module. It had been pulled out when the back was taken off the Tx!

Larry Jolly	38,9 km	104'00"
Charles Rudnick	34,1 km	79'00"
Frikkie Roos	31,4 km	82'24"
John Lightfoot	19,7 km	34'00"
Craig Thompson	7,9 km	10'14"
Peter Stevens	3,3 km	17'05"

SATURDAY      Task Five      42,4 km

This was bound to be something of an anti-climax, since Larry was so far ahead, having scored 1000 on every task bar one when he got 999, that there was no way he could be caught. The course selected was the same one used on the second day.

Only Larry really got away, and it looked as if he would make it all the way round when the Findlay-mobile boiled! Larry started walking on down the course while the rest of the crew tried to find some water, but they were unlucky. Imagine the frustration of being foiled by the breakdown of your chase vehicle.

Larry Jolly	21,5 km	36'10"
Frikkie Roos	8,1 km	33'17"
Charles Rudnick	4,5 km	20'10"
John Lightfoot	4,2 km	14'16"
Peter Stevens	3,3 km	7'40"
Arnold Paikin	3,0 km	20,48"
Craig Thompson	2,7 km	10'41"
Bruce Thompkins	2,2 km	5'33"

And so all that remained was to collect the bits and pieces and repair to the Loftus Versveld Restaurant for a farewell and celebratory dinner, which proved a very satisfactory finale to the week. All competitors were presented with a commemorative plaque, Larry Jolly collecting a king-size version.

The final score sheet looked very much as it had on every task through the week ...

Larry Jolly	4999
Charles Rudnick	3887
Frikkie Roos	2827
Arnold Paikin	1410
John Lightfoot	1116
Peter Stevens	661
Craig Thompson	492
Bruce Thompkins	174
Paul Reatty	129



*Andy Keil launches "Comet" for Larry Jolly.*

The only complaint to be heard during the week was about the site ... the fences, telephone wires, power pylons and the field surface itself made for rather tricky flying conditions. The response is of course simple ... it's a bit much to ask for the facilities and the flying site to be the best. Perhaps the question should be aired ... which should have the higher priority?

Finally, a sincere thankyou to all those who made the event possible --- the organisers, the co-ordinators, the behind-the-scenes workers and the competitors, especially our visitors. What a pity there weren't more of them!



In the April RCSD author David Fraser introduced some novel considerations about stability and tuck problems encountered with sailplanes. He described his computer program, and some of the results. The conclusions and some ideas for future exploration are contained in this month's Part II. JHG

Since the actual shape of the lift curve has a significant effect on stability it seemed reasonable to model typical departures from an ideal straight line. Three non-linearities were designed, and the actual constants involved were played with until the result more or less agreed with the published data.

The first non-linearity (non-L) was a gradual reduction in slope as the  $C_l$  increased. The second was a full stall at high  $C_l$ . The last was somewhat different in that it was intended to simulate the twisting of high moment wings at high speed, or, what is the same thing, low  $C_l$ . In this last case I have no data to indicate just how much twisting really occurs, and it clearly depends on the actual construction of the wing. A fully sheeted, short wing will show much less twisting than a very long partially sheeted one such as the XC, but exactly how much I don't know. However, as they say, "an interesting thing happened on the way to the forum." Both Althaus' books clearly show that many wings apparently exhibit an identical effect without twisting, that is, the lift-curve slope is substantially greater at low  $C_l$ , especially for undercambered wings. Since the airplane neither knows or cares why the slope is changing it really doesn't make any difference whether one or both effects are involved, so non-L 3 can be taken as representative of the latest data or of twisting, your choice.

The solid line in figure 2 shows the effects of the two high  $C_l$  non-L's. They are really not that important. The short dashes add the third non-L and now we see what appears to agree with the tuck effect - a stable plane at high  $C_l$  and an unstable and negatively trimmed one at low  $C_l$ . At this point I was feeling pretty satisfied.

However also at this point PfdM Vol.2 arrived. Unlike vol.1, vol.2 shows moment data, and in particular it shows a rapid increase in the moments of almost all cambered wings at high  $C_l$ . When I added this effect into the program, curve 3 (long dashes) of fig.2 appeared. The airplane is once again stable and correctly trimmed at all  $C_l$ . What looked like a good explanation without the variable moments no longer works. (Figure 3 shows this effect alone with a "Y1 = 0" type airplane.  $C_{m1}$  was held constant at -0.05 for  $0 < C_l < 0.7$ , and increased linearly to  $C_m = 0$  for  $0.7 < C_l < 1.2$ , see fig 4.)

At first glance it might appear that a moment that made the airplane go more nose down at low  $C_l$  (high speed) would aggravate the tuck effect rather than alleviate it. The reason it doesn't can be seen by looking at what the program did to the cg location, i.e. it moved it considerably forward to get the correct trim at  $C_{l1}$ , where the  $C_m$  is increasing. What the positive slope in fig. 4 is really saying is that the ac of the wing is considerably forward of the 25% chord point. This in turn means that the neutral point of the airplane moves forward with it and that the airplane must now be trimmed with the cg in front of this displaced neutral point. At low  $C_l$ , when the  $C_m$  is constant, the ac is at the 25% point and the stability margin is now much greater, hence the more negative slope of the graph.

FIGURE 3 12/28/85

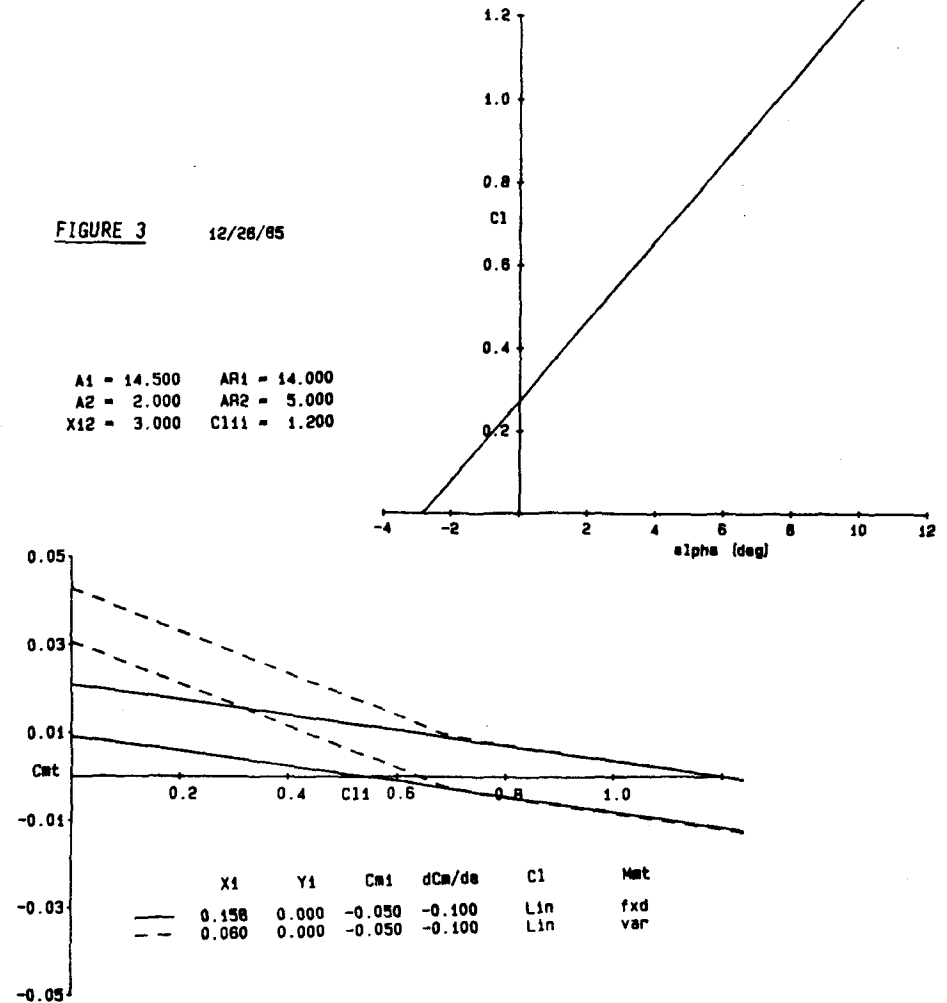
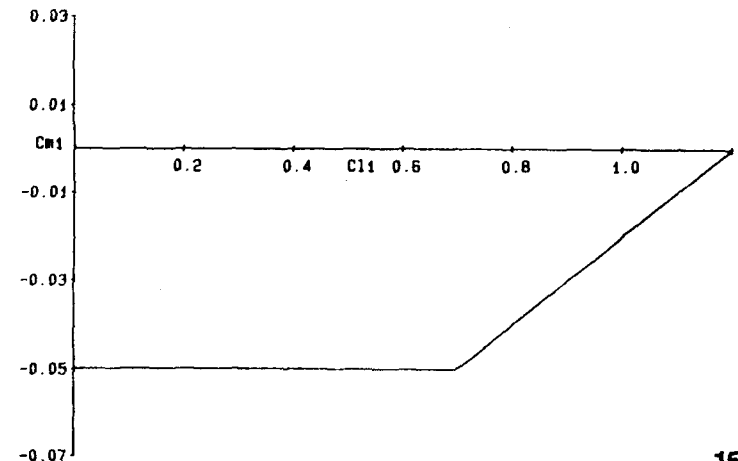


FIGURE 4

1/14/86



It appears there may be several answers to the tuck problem:

1. Possibly the Althaus moment data is wrong. Since none of these measurements has been repeated by anyone else, it's impossible to say. Clearly we need data from another facility as verification, even ignoring this problem.

2. Perhaps there are aspects of individual airplanes other than the airfoil that are having a non-linear effect on, say, the downwash. If that's the case, it ought to be possible to find distinct differences in the tuck tendency with different locations of the horizontal stabilizer.

3. An experiment with an airplane such as Dodgson's Windsong which has a reflexible trailing edge flap would be interesting. If, for example, the tuck was different at different settings of the flap, or if it disappeared entirely for a fully reflexed flap ( $C_m \text{ approx.} = 0$ ), that would be a significant clue.

4. In a very mundane vein, just how much backlash do we have in our stabilizer cables or pushrods? If you look at fig. 1, the difference in the incidence angle between the any two lines is only 1.4 degrees. For the XC that's less than 3/32 inch at the leading edge of the stabilator. In other words, if, after pushing the nose down to build up speed the stabilator didn't return to the original position it's possible the trim could be changed enough to guarantee the tuck. One of the penalties of flying with a very small stability margin is that the stabilizer effectiveness (the change in trim  $C_l$  per unit change in stabilizer incidence) is very high, and goes to infinity for a neutrally stable airplane.

In any event, more work needs to be done. More than one airplane has been destroyed in a high altitude, tucked-under dive. If we can find a way to avoid that in airplanes which appear fine at low speed, our sport will be improved.

-----  
David B. Fraser  
1335 Slayton Drive  
Maple Glen, PA 19002

References:

1. RC Soaring Digest, Jan., April & August 1985.
2. Aeronautical Research Committee; Modern Developments in Fluid Dynamics, sections 209 & 210. Clarendon Press, Oxford, 1938; republished by Dover, 1965. It is interesting to note that the detailed effects of separation at low Re were well known before 1938.
3. Althaus; Profilpolaren fur den Modellflug. Neckar-Verlag, Villingen-Schwenningen, West Germany. Two Volumes, 1980 & 1985.
4. Fraser; Equilibrium Stability & the Load on Your Tail. To appear in Soartech in 1986.
5. Perkins & Hage; Airplane Performance, Stability & Control, Ch. 5. Wiley, New York, 1949.
6. Fraser; "Stability", A HPL program for the Hewlett-Packard 9825B or 9826 and the HP 7475A Plotter. An ASCII monitor or terminal is also required. Available to anyone who sends me a blank tape cartridge.

A SOARER'S SOLILOQUY

by  
Catherine Beckett

If I had a new transmitter  
Would my League position climb?  
Would I get in all the fly-offs,  
Hit the circles every time?

Would the thermals come and get me,  
Lift pursue me everywhere?  
Would I circle with precision,  
Robin Cousins of the air?

Should I fork out on a Sanwa,  
Or Micron to build myself,  
Or perhaps a Gold Futaba,  
Sent by post or off the shelf?

I'd have more controls than Concorde,  
Rates and trims and mixers too,  
And with modules I've pre-programmed,  
There'll be nothing I can't do.

BUT

If I used my new transmitter  
Might it soon become quite clear  
That what really needs improving  
Is my flying, not my gear?

WINNING IMAGE: For all you C.D.'s, contest organizers or trophy committee chairmen, here's the break you've been waiting for. Rich Bonnell of St. Petersburg, Florida (ad in this issue) has taken the plunge...and has set up his shop with all new equipment and materials to produce the finest trophy plaques in wood, plastic, and metal - or a combination of these materials. His designs are absolutely unique and beautiful, and for those who know Rich, his craftsmanship has to be seen to be believed. He can provide them for as little as \$10 each...and on up. Call or write now to cure your perpetual headache in choosing the 'hardware' for your next contest.

NEW LSF OFFICERS:.....TMSS Newsletter

Skip Schow has been elected PRESIDENT, and Woody Blanchard elected VICE-PRESIDENT, of the League of Silent Flight. Woody is currently LSF Level IV. According to the newsletter, TMSS, March 1986, there will NOT be an International LSF meet this year, and that clubs are encouraged to hold regional meets instead. Charlie Wells is Treasurer, and Peter Waplinger is Secretary.

With final grant of reprint permission from two magazines, RCSD plans to publish a book this spring/summer about thermal soaring. The book will have about 75 pages, and will contain articles reprinted from newsletters and magazines. Some of these, if seen at all in their original forms by RCSD readers, will not have been seen by many...and, therefore, we think the information may represent a valuable addition to your soaring library. Containing material gleaned and reproduced by Bill Kournakakis, presently living in Medicine Hat, Alberta, this anthology represents a big effort and a lot of time. Publication will be undertaken only if RCSD receives sufficient orders to make it practical and economically feasible AT NO PROFIT. I am mainly interested in recovering costs. Hopefully, printing and mailing can be accomplished for under \$10 per copy. Between soft covers, the material will be good quality photo reproduction, similar to that of SOARTECH. If you are interested in a pre-publication order, or will order once publication is assured, please let me know immediately so that I can begin making plans NOW. pre-publication

PHANTOM - POWER SCALE SLOPE SOARER.....Howard Metcalf

An issue or two ago you saw a photo, repeated here, of a new type of soaring machine: a scale jet; in this instance a McDonnell-Douglas F-4 Phantom. Now this kit is available, and I have one that will be reviewed in a month or two - right here in RCSD. IT IS A BEAUTIFUL PIECE OF WORK, LET ME TELL YOU RIGHT NOW!!!

The PHANTOM is available from HOWARD METCALF MODELS, 15 Brownlow Avenue, Southampton, SO2 7BX England. It is available with built-up wings (which are not included with the plans) or you may order the optional foam wings, which can be planked with balsa, or merely covered with tissue and flown that way.

The beautiful part of the entire model is the spectacular piece of moulded ABS plastic that forms the fuselage in two halves: left and right. In itself, it is a work of art and worth the price.

Here's Howard himself to tell you more about it.

"The MINI JETS PHANTOM is an incredibly realistic and breathtaking lightweight scale glider that's quick to build and easy to fly. The model weighs about 20 ounces using two mini servos and a 225 mah battery, giving a wing loading of about 14 oz./Sq. Ft. This makes it a remarkably efficient Power Scale Slope Soarer enabling it to be flown in light lift conditions with wind speeds around 12 m.p.h. The stunning scale fuselage, which can be put together in about an hour, is moulded from ABS "car bumper plastic". The partial kit includes the plan for a built-up 31" balsa wing and tail surfaces; together with detailed instructions, and a superb set of coloured self-adhesive decals. For those having no time for building, two types of foam wings are optionally available. The veneered foam wing is one ounce heavier than the built-up wing and weighs six ounces. We recommend the blue foam wing which weighs only four ounces and is extremely strong when simply finished per the instructions.

"Details for conversion to power are included in the pack. With a lightweight .049 such as a Cox Medallion, it makes a good sports flier. With an .09 it is sparkling.

"The ABS fuselage is 37" long, and the finished model - which has provisions for a tow hook - may be flown as a sloper, converted to power, or flown off the flat with a bungee (hi start) launch."

You may call Howard Metcalf for technical information at (04896) 447 or talk with Clive Metcalf for sales information at (0703) 434601. Please mention RCSD when you write or communicate with this company.

Because of the high cost of collection of foreign cheques /currency, (Dollars to Pounds Sterling, for example) Howard Metcalf Models can accept payment - in Pounds Sterling only - by "Bankers Draft". The cost of each product is as follows:

- Fuselage and plan pack (partial kit).....27 Pounds
- Blue foam wings.....optional.....14 Pounds
- Veneered white foam wings...optional.....16 Pounds

Note: these prices include postage and packing, which I assume to be air postage, but am not sure of this. Better write or call and ask first. My shipment came by air in about a week.



CORRECTION: In the March 1986 issue of RCSD, page 10, we told you the Proceedings of the MARCS Soaring Symposium could be obtained for \$5.00. That is not correct. The 1984 Proceedings are \$8.00 (\$9.00 First Class mail); and the 1985 Proceedings will be \$10 (\$11.00 for First Class mail). They should be available in June. Thanks Al Scidmore, and apologies for my blunder.....Jim Gray.

## RCSD BACK ISSUES!

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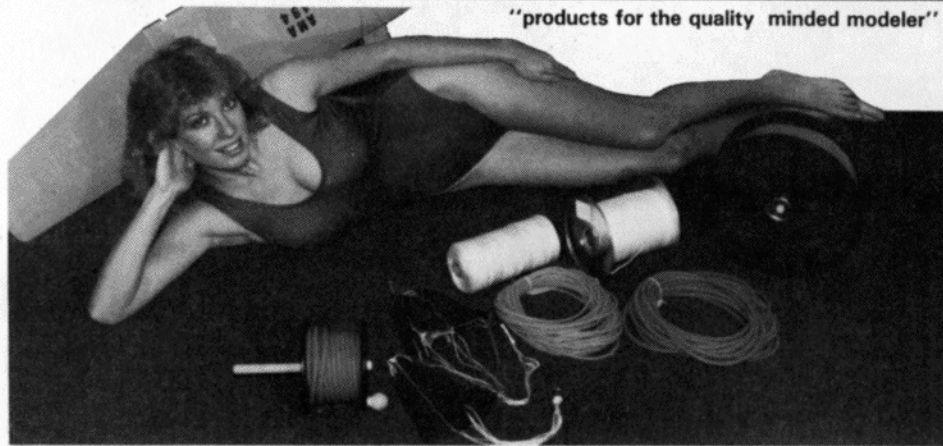
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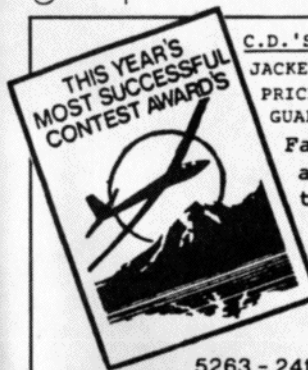
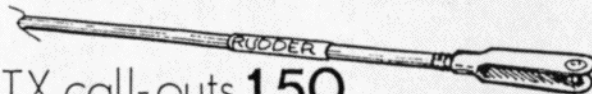
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