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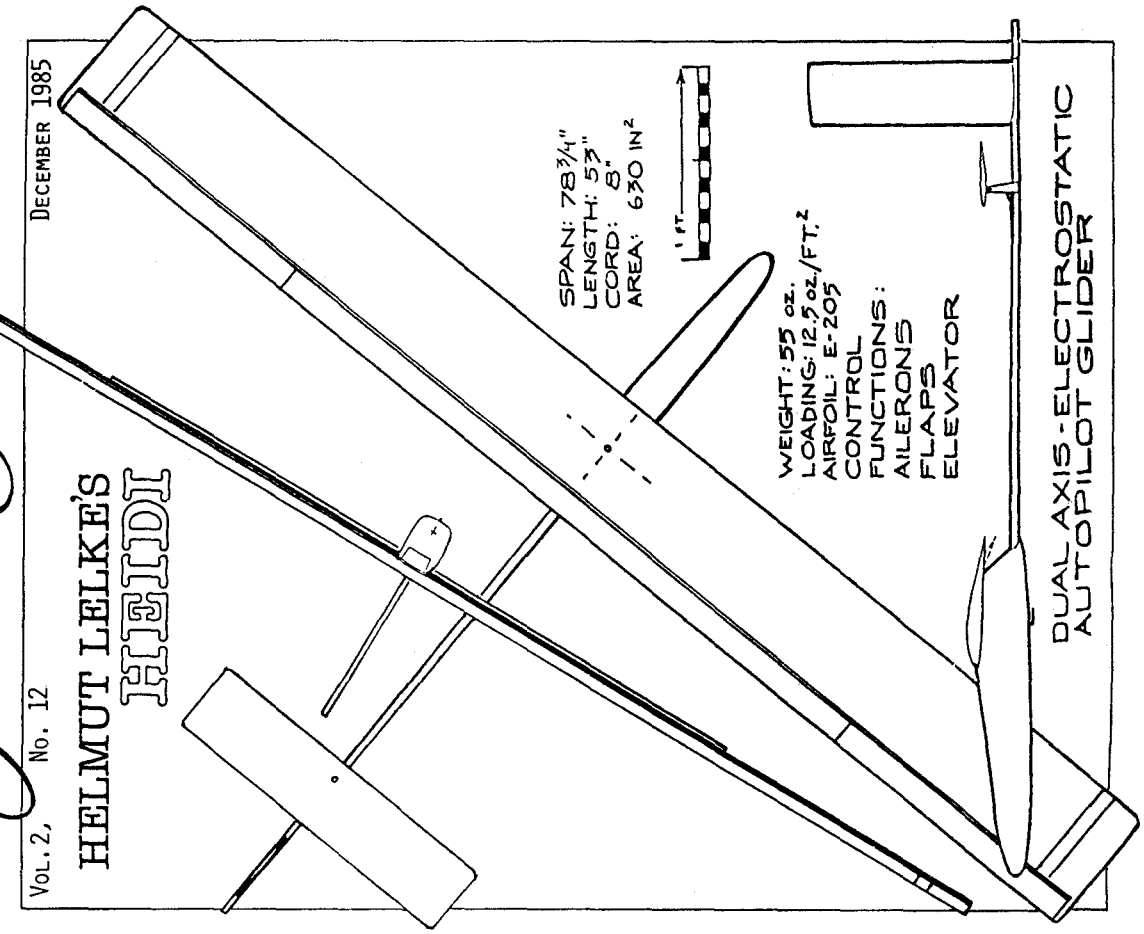
HELMUT LELKE'S HEIDI



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SEASON'S GREETINGS!

A WONDERFUL TIME TO SHARE 'THINGS' WITH FRIENDS: IDEAS, FRIENDSHIP, CONGRATULATIONS, SYMPATHY, CONDOLENCES, HAPPINESS, JOY, PEACE, AND LOVE; THINGS THAT YOU CAN'T PUT A PRICE TAG ON. THESE ARE THE IMPORTANT THINGS COMPARED TO WHICH EVERYTHING ELSE PALES TO INSIGNIFICANCE. OH, ONE MORE 'THING' - GOOD HEALTH, WITHOUT WHICH MANY OF THE OTHER 'THINGS' AREN'T POSSIBLE. WE'RE ALL ASTUTE ENOUGH TO KNOW THAT WHEN PUSH COMES TO SHOVE THE MEANINGFUL THINGS ARE THESE VERY MENTAL, PSYCHOLOGICAL AND EMOTIONAL VALUES; YES, EVEN SPIRITUAL VALUES...THERE, I'VE SAID IT. SURE, WE ALL LIKE PHYSICAL THINGS, MECHANICAL THINGS, THAT CAN BE FELT AND MANIPULATED, SMELLED, TASTED, HEARD AND SEEN...AND THAT BRINGS US TO - WHAT?

IN MY MIND, IT BRINGS US TO SOARING. CONSIDER: THE PHYSICAL THINGS ARE THE MAN, THE SAILPLANE, THE RADIO, AND THE ENVIRONMENT; THE MENTAL THINGS ARE THE SKILL, THE TRAINING, THE KNOWLEDGE, AND THE DISCIPLINE REQUIRED TO FLY WITH VERVE AND ELAN...BUT THERE IS SOMETHING MORE, ISN'T THERE? WE'VE ALL 'FELT' OR SENSED IT; A BLEND OF PSYCHOLOGICAL, EMOTIONAL AND SPIRITUAL VALUES THAT COMBINE TO PRODUCE WITHIN US A DIFFICULT - TO - DEFINE 'SOMETHING' THAT MAKES US GO ON, OR LEADS US ON.

IN OUR OWN WAY, EACH OF US IS A 'JONATHAN' OR J.L.S. AS IN RICHARD BACH'S FAMOUS BOOK; WE'RE INVOLVED IN THE SEARCH AND THE STRUGGLE, AND WE'RE BOUND SOMEWHERE. TO WHERE? TO WHAT? THE ENDPOINT? FRANKLY, I DON'T THINK THAT'S THE ANSWER, OR EVEN THE QUESTION. LIKE MANY OTHER 'THINGS' IT'S THE JOURNEY, THE TRAVEL, THE FUN ALONG THE WAY THAT BECOMES THE END IN ITSELF. THE FRIENDS WE'VE SHARED WITH, THE DELIGHTS OF ACCOMPLISHMENT, THE EXTRACTION OF ENERGY FROM OUR NATURAL SURROUNDINGS. THE MEANS HAVE BECOME ENDS, HAVEN'T THEY? BUT WHAT ABOUT OURSELVES? AHA! THAT'S THE VERY POINT I'M COMING TO. THE ALCHEMISTS LOOKED FOR A TRANSMUTATION OF LEAD TO GOLD, BUT IN THE END WERE THEMSELVES TRANSFORMED TO A HIGHER STATE OF BEING. THIS IS THE GOAL OF ALL RELIGEONS: TO TRANSFORM MAN FROM DROSS TO FINE THROUGH STUDY, YES, BUT MORE IMPORTANTLY THROUGH ACTS. AYE, THERE'S THE ANSWER: WHAT WE DO ALONG THE WAY, HOW WE ACT, AND WHAT WE LEARN; THE FAILURES, TOO, WHICH AREN'T REALLY FAILURES BUT ONLY YARDSTICKS AND MILESSTONES THAT GIVE US SOMETHING TO COMPARE WHERE WE'VE BEEN WITH WHERE WE'RE GOING.

IT'S TIME FOR ME, TOO, TO TAKE STOCK, TO LOOK AROUND, TO SEE THE MILESTONES AND YARDSTICKS ALONG THE ROAD THAT YOU AND I HAVE TRAVELLED TOGETHER FOR TWO YEARS NOW...AND TO SHARE A LITTLE BIT OF THAT WITH YOU.

JUST A FEW DAYS AGO, I GATHERED TOGETHER SOME EARLY ISSUES OF RCSD AND COMPARED THEM WITH THE LATEST ONES. LOOK AT THE CHANGES! LOOK AT THE DIFFERENCE! SEE WHERE WE'VE BEEN. FRANKLY, I DON'T UNDERSTAND WHERE YOUR FAITH TO SPEND THAT KIND OF MONEY ON AN 'UNKNOWN' CAME FROM. DO YOU REALIZE THAT MOST OF YOU BOUGHT THE PRODUCT SIGHT UNSEEN - FROM JUST A LETTER OF INTRODUCTION? IT'S THE TRUTH, AND IT'S YOUR FAITH AND SUPPORT THAT HAS BEEN YOUR GIFT TO ME. I'M HAPPY WITH OUR PROGRESS, AND LOOK FORWARD TO EQUIVALENT PROGRESS OVER THE NEXT TWENTY-FOUR ISSUES. WOULD YOU LIKE TO KNOW WHAT HAS MADE ME REALIZE THAT THERE'S NO WAY I CAN LET YOU DOWN? SIMPLE: THE FEW BRAVE SOULS AMONG YOU WHO HAVE SENT ME THREE-YEAR OR TWO-YEAR SUBSCRIPTIONS!

IT'S A TIME OF REJOICING, OF THANKS, AND OF GOOD CHEER. LET ME SHARE IT WITH YOU. HAPPY SOARING,

Mail From Here'N'There

Remember Craig Hampson who designed the Oxford and Rhine gliders and showed us how they looked, back a couple of issues ago? Well, here are some pix, along with explanations from Craig.

"...The first picture shows me with my Oxford. It flies nicely but keeps me on my toes (straight dihedral, no poly) has an Aero-sport radio and British markings. A Rhine version will be ready soon.

"The second picture is of a HOB (Bob Martin) 2T. It is owned by my good friend and flying buddy Matt Biskup (age 13). He consistently gets six-minute flights, especially with his Cox 'Black Widow' engine which seems more powerful than mine.

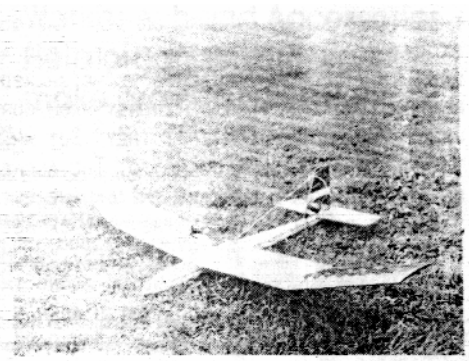
"The third picture is of my Gentle Lady which now has about 400 flights on it (I average 20 per flying day) ...she really floats yet handles the wind well.

"I hope the pictures print well. Keep in contact.

Sincerely, Craig"

Editor's Note:

Thanks, old buddy; these are exactly the kind of pictures we like. Notice that Craig, who is 15, is already helping and instructing his younger friends in the gentle art of designing, building and flying sailplanes. Keep up the good work, Craig...and let's see more.



Kit Review: 'El Primero' & Stepp Two.....Bob Gracey

Some time ago, I asked Bob Gracey, down in Morristown, Tennessee, to do a couple of reviews for RCSD. Buzz Waltz had sent me his El Primero two-meter ship (as well as a Poquito Primero hand-launcher, about which more will be forthcoming later on) for test purposes. I chose to 'farm out' the job, primero-ly because of lack of time. Ouch! I can't rssist bad puns...Anyway, good friend Bob also had purchased a Stepp Two independently, so I asked him to prepare a report on both. Here it is, in all its magnificent brevity. As Jack Webb used to say: "Just the facts, please ma'am."

"El Primero:

1. Good two-sheet plans
2. Good band-sawed ribs (not die cuts)
3. Good wood, but marginal amount
4. Enclosed A.M.A. Brochure - good
5. Two-piece wings with hardwood spars out to the tips - good
6. Shear webs to the tips - very good (strong like Bull)
7. Two wing wires - good
8. Fuselage sides 3/32" doubled vertically with balsa plus a 1/4-inch longeron...very sturdy
9. Rudder and elevator - built up structure - no problems
10. Excellent plans and directions, except that the plans show one dihedral while the directions show another. I thought the plans were wrong, so I went with the directions.
11. No real trouble spots in construction - my plane ended up at 37 ounces, ready to fly.
12. Flies fine, launches nicely, and seems to do a fair job of penetrating without ballast. I think it is a good value and a nice flying sailplane.

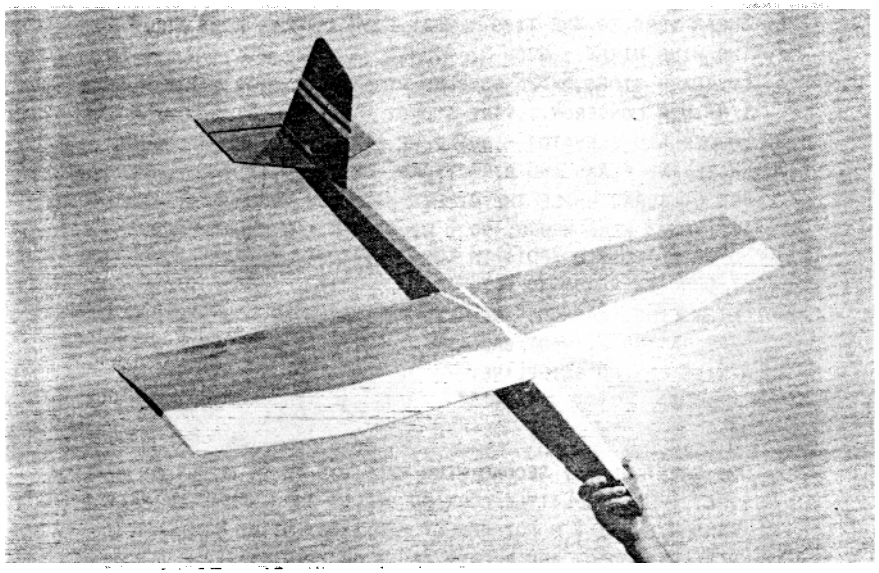
*****

Stepp Two:

1. One-sheet plans; second wing half had to be built on reverse side. I used a little cooking oil on the plans (to make them translucent); I'm not really mad about doing that.
2. Excellent wood, and plenty of it for the kit
3. Die cut ribs, but very neatly done and not die crushed
4. Fairly wide fuselage can handle most servos
5. Fuselage is balsa with a forward ply doubler and longerons; very sturdy
6. Uses two-piece wing with one wing wire. I would probably add a dowel guide if I built another one, as the wing rod is a little loose in the wing tubing, and hard to keep straight when putting it together to fly
7. Very nice looking ship when done - mine weighed 37 ounces (again) but that can vary with servo and battery
8. Flies very well, but it seems to me that all two-meter ships are touchy on the rudder and elevator (throws or travel) and should be watched by the beginner.
9. Again, I think this is a very good value. Sheldon Hobbies has it right now for $18.96.

I FLEW THEM BOTH WITH A LIGHT HIGHSTART AT FIRST, AND THEN SWITCHED TO SOMETHING WITH MORE 'MUSCLE'. ALTITUDE ALWAYS HELPS."

THE STEPP TWO SAILPLANE IS A PRODUCT OF CRAFT-AIR, WHILE THE EL PRIMERO IS A PRODUCT OF BUZZ WALTZ DESIGNS. CRAFT - AIR CAN BE REACHED DIRECTLY BY WRITING TO 20115 NORDHOFF STREET, CHATSWORTH, CA 91311, OR BY TELEPHONING (818) 998-3700. OF COURSE, YOU SHOULD TRY THE HOBBY SHOPS AND MAIL ORDER DEALERS, TOO, WHICH CARRY THE CRAFT-AIR LINE OF PRODUCTS. BUZZ WALTZ CAN BE REACHED BY BUZZ WALTZ R/C AIRPLANES, 403 INDUSTRIAL PLACE, PALM SPRINGS, CA 92262. I DON'T HAVE A TELEPHONE FOR HIM, BUT I'LL BET THE OPERATOR CAN GET YOU ONE. SO FAR, I HAVE NOT CHECKED MANY DEALERS' ADS TO SEE IF THEY CARRY THE WALTZ LINE OR NOT. CHANCES ARE, SOME DEALERS AND HOBBY SHOPS DO...AND IF THEY DON'T, GIVE THEM THE ADDRESS ABOVE.



EL PRIMERO POSES AGAINST THE SKY (Roy Stephens photo)

SOAR-CES:

A COUPLE OF INQUIRIES HAVE COME MY WAY LATELY ABOUT MODERN PROFILES FOR SAILPLANES; CO-ORDINATES, LIFT AND DRAG POLAR CURVES, AND THE LIKE. THERE ARE SEVERAL SOURCES OF THIS INFORMATION, BUT NOT ALL OF THEM (THE PROFILES) ARE ALL AVAILABLE UNDER ONE 'ROOF' SO TO SPEAK. I HAVE HEARD THAT THE 'MTB' BOOKS FROM GERMANY CARRY THIS AIRFOIL DATA, AND THEY ARE CALLED 'PROFILPOLAREN FUER DEN MODELLFLUG' YOU MIGHT TRY AN AVIATION BOOKSTORE SOURCE LIKE ZENITH AVIATION BOOKS (A VERY GOOD AND REPUTABLE STORE, BY THE WAY) C/O P.O. BOX 1, OSCEOLA, WI 54020; OR YOU MIGHT TRY WILSHIRE MODEL CENTER , 3006 WILSHIRE, SANTA MONICA, CA 90403. I UNDERSTAND THAT THERE ARE THREE OR FOUR BOOKS COVERING THE GAMUT OF AIRFOILS, AND THAT EACH BOOK SELLS FOR UNDER $10. HOWEVER, BY THE TIME YOU PAY SHIPPING AND HANDLING, THE COST WOULD NO DOUBT COME TO ABOUT THAT AMOUNT.

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TRAILING EDGES.....BRUCE ABELL

"They used to be behind before, but now they're first at last!" Bruce Abell strikes again from Down Under, with some interesting ideas about the part that's pinned to the board last. Just ribbing, Bruce.

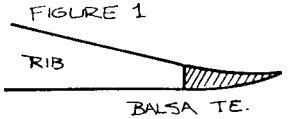
"WELL, WE'VE TALKED ABOUT THE MAIN SPAR AND SHEAR WEBBING OF OUR GLIDER WING, SO PERHAPS WE SHOULD NOW LOOK AT THE TRAILING EDGE AND ITS ASSOCIATED PROBLEMS. FIRSTLY, WE HAVE TO DECIDE JUST WHAT FUNCTION THE TRAILING EDGE OF A WING SERVES.

"I DON'T SUPPOSE THERE WOULD BE ANY READER WHO HASN'T SEEN AT LEAST ONE PHOTOGRAPH OF A WORLD WAR I AIRCRAFT SHOWING A SCALLOPED TRAILING EDGE TO THE WING. THIS SCALLOPED EFFECT IS THE RESULT OF THE TRAILING EDGE BEING MADE UP OF SPRING STEEL WIRE (USUALLY 1/8" DIAMETER) WHICH IS PULLED IN BETWEEN THE RIBS BY THE SHRINKAGE OF THE DOPED FABRIC COVERING.

"OBVIOUSLY, THEN, THE TRAILING EDGE CONTRIBUTES LITTLE, IF ANY, STRUCTURAL STRENGTH TO THE WING...SO WHAT PURPOSE DOES IT SERVE?

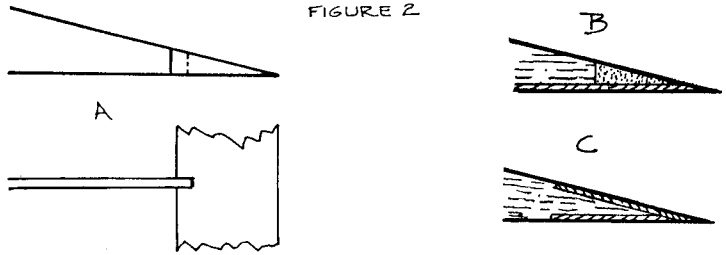
"ITS PRIME PURPOSE, OF COURSE, IS TO PRESERVE THE OUTLINE OF THE WING - AND, IN DOING SO, ACT AS A GUIDE AND MEANS OF ATTACHMENT FOR THE COVERING MATERIAL. UNFORTUNATELY, DUE TO THE NEED FOR FABRIC/FILM-TYPE COVERINGS TO BE SHRUNK TO TIGHTEN THEM, TRAILING EDGES SOMETIMES BECOME DISTORTED. OUR WORLD WAR I AEROPLANE WITH THE SCALLOPED TRAILING EDGE IS ONE EXAMPLE, BUT THE MOST COMMON PROBLEM IS FOR THE TRAILING EDGE TO WARP UP AS SHOWN IN FIGURE 1.

FIGURE 1



"THIS, OF COURSE, CHANGES THE WHOLE SHAPE OF THE SECTION, LEADING TO A CHANGE IN PERFORMANCE...SO WE HAVE TO DEVISE A METHOD OF TRAILING EDGE CONSTRUCTION WHICH WILL MINIMIZE THIS WARPING TENDENCY.

FIGURE 2



"FIGURE 2 (A) SHOWS ONE METHOD WHICH EFFECTIVELY INCREASES THE GLUING SURFACE OF THE RIB-TRAILING EDGE JOINT AS COMPARED WITH THE NORMAL 'BUTT JOINT'. BY USING THE NORMAL BUTT JOINT IN CONJUNCTION WITH GUSSETS, YOU CAN DO THE SAME JOB.

"FIGURE 2 (B) SHOWS ANOTHER METHOD WHICH CAN BE USED IN CONJUNCTION WITH A FULLY-SHEETED WING UNDERSURFACE, AND THIS TYPE OF TRAILING EDGE GETS CONSIDERABLE STIFFENING FROM THE GLUE JOINT. THE TRAILING EDGE SHOWN IN FIGURE 2 (C) IS ANOTHER POPULAR METHOD OF CONSTRUCTION WHICH HAS THE ADDED ADVANTAGE OF LIGHTNESS AS WELL AS GOOD STIFFNESS. THERE ARE MANY VARIATIONS ON THESE BASIC METHODS OF TRAILING EDGE CONSTRUCTION.

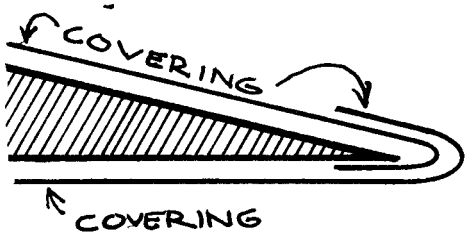
"'SO WHAT HAS THIS GOT TO DO WITH JUST GLIDERS, YOU ASK?' WELL, OUR

GLIDER IS MUCH MORE PRONE TO LOSS OF PERFORMANCE DUE TO DISTORTION OF WING SECTION THAN ALMOST ANY OTHER TYPE OF MODEL, SO EVERY SMALL IMPROVEMENT IN CONSTRUCTION THAT RETAINS AN ACCURATE SECTION IS WORTHWHILE. HOWEVER, WE STILL HAVEN'T DONE ALL WE CAN TO IMPROVE OUR TRAILING EDGE.

" TO OBTAIN THE MAXIMUM BENEFIT FROM THE WING, THE TRAILING EDGE SHOULD BE SANDED TO A KNIFE-EDGE SHARPNESS, AS A THICK EDGE ONLY CREATES A LOT OF UNWANTED DRAG...BUT THE KNIFE EDGE IS VERY PRONE TO WARPING AS WELL AS BEING EASILY DAMAGED, SO IT HAS TO BE STIFFENED IN SOME WAY.

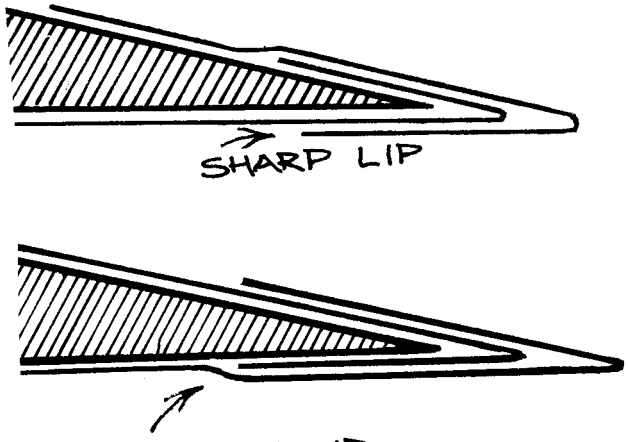
"ONE OF THE SIMPLEST WAYS I HAVE FOUND TO STIFFEN A KNIFE-EDGE TRAILING EDGE IS TO RUN A BEAD OF CYANOACRYLATE ADHESIVE ALONG THE FINAL 4 - 5MM. OF T.E. THIS SOAKS INTO THE BALSA AND REALLY TOUGHENS IT UP. A FURTHER IMPROVEMENT IS TO WRAP THE COVERING AROUND THE EDGE AS SHOWN IN FIGURE 3.

FIGURE 3



NOTE THAT THE TOP COVERING IS ATTACHED FIRST! THIS IS VERY IMPORTANT!!! A CLOSE STUDY OF FIGURE 4 SHOWS WHY.

FIGURE 4



"BY SACRIFICING HALF THE EXTRA STIFFNESS AND STRENGTH IMPARTED BY WRAPPING THE COVERING AROUND THE T.E., THIS POTENTIAL INCREASE IN DRAG CAN BE ELIMINATED BY NOT RETURNING THE TOP COVERING AROUND THE TRAILING EDGE, AND BY TRIMMING IT FLUSH INSTEAD. SO REMEMBER: IF YOU WANT TO EXTRACT MAXIMUM PERFORMANCE FROM YOUR GLIDER WING, YOU HAVE TO KEEP THE TRAILING EDGE SHARP, AND YOU HAVE TO PREVENT IT FROM WARPING AND THEREBY CHANGING THE WING'S CHARACTERISTICS."

AEROTOWING, A 'BIG BROTHER' WAY TO LAUNCH.....J. LEE SMITH*

GOOD FRIEND, READER, AND SUBSCRIBER J. LEE SMITH OF WINNIPEG, MANITOBA, CANADA HAS COME TO THE FORE WITH A VERY LUCID EXPLANATION OF THIS ALTERNATIVE LAUNCHING METHOD WHICH IS PARTICULARLY ADAPTABLE TO SCALE SAILPLANES, BUT EQUALLY USEFUL FOR EVERYDAY LAUNCHING OF VERY LARGE MACHINES.

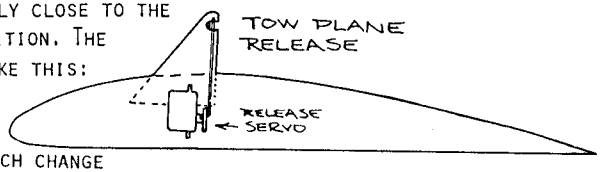
"I'VE BEEN FLYING SAILPLANES FOR 15 YEARS WHICH MAKES ME AMONG THE FIRST DOZEN OR SO PEOPLE IN CANADA TO GET AIRBORNE...OR SO I BELIEVE. SLOPE IS MY FIRST LOVE, ALTHOUGH I'VE FLOWN LOTS OF THERMAL WITH GOOD SUCCESS, BUT NOW FIND IT A BORING EXPERIENCE COMPARED TO SLOPE WORK. SO, I FLY THERMAL NOW JUST TO KEEP MY THUMB AND FOREFINGER IN SHAPE (NOTE THAT ALL FLYING SHOULD BE DONE WITH TWO FINGERS ON THE STICK - NOT JUST THUMBS ONLY) FOR TRIPS TO THE SLOPE. OUR CLUB MEMBERS (THE MAAC MEN) DRIVE 350 MILES TO A SLOPE SITE FOR A LONG WEEKEND, WHICH MEANS THAT WE GET OUT ONLY ABOUT FIVE TIMES A YEAR. A 700-MILE TRIP REQUIRES DEDICATION!

"THREE WEEKS AGO I RETURNED FROM A VISIT TO ENGLAND AND WALES WHERE I WAS VERY FORTUNATE TO DO SOME SLOPE FLYING WITH PILOTS THAT MAKE ME LOOK LIKE I'VE BEEN LIVING IN THE ICE AGE! IF YOU ARE INTERESTED, I CAN FURNISH SOME PHOTOS TO RUN IN RCSD ALONG WITH A SHORT ARTICLE DESCTIBING THEIR DESIGN PHILOSOPHY IN DEPTH, REGARDING SLOPE AEROBATICS. (BOY, WOULD WE EVER! JIM).

"THIS BRINGS ME TO THE REAL MEAT OF THE REASON TO WRITE TO YOU - AEROTOWING. I WAS FORTUNATE TO ATTEND A 1/4-SCALE AEROTOWING RALLY AT UFFINGTON, ENGLAND AT THE END OF AUGUST. ABOUT 30 AIRCRAFT WERE THERE, ALL VERY LARGE AND SO PERFECTLY BUILT THAT FROM 20-FEET AWAY IN THE AIR YOU JUST COULD NOT TELL THEM FROM THE FULL-SIZE MACHINES! I INTRODUCED MYSELF TO THE CD AND WAS GIVEN THE ROYAL TOUR OF THE AEROTOWING PROCESS. LET ME PUT INTO POINT FORM SOME OF THE MOST IMPORTANT POINTS THAT I DISCOVERED THERE FROM THESE PEOPLE WHO HAVE BEEN SUCCESSFULLY AEROTOWING FOR TEN YEARS.

1. USE AN AIRCRAFT WITH LOTS OF POWER - THE SMALLEST ENGINE I SAW ON A TOWPLANE WAS A .90 ON AN AIRCRAFT SIMILAR TO AN UGLY STICK. THE MAJORITY OF TOWING WAS DONE BY 1/4-SCALE CITABRIAS WITH TARTAN ENGINES. THEY HAVE TRIED THE .40 AND .60-SIZE-POWERED AIRCRAFT AND FOUND THAT THEY DIDN'T HAVE ENOUGH POWER TO PULL THE SAILPLANES OUT OF DIFFICULTY IF ANYTHING WENT WRONG DURING THE TOW. (IN A MORE RECENT LETTER, J. LEE DESCRIBES .60-POWERED SHIPS BEING SUITED TO TOWING UP TO 100"-SPAN SAILPLANES, WHICH WOULD APPEAL TO A LARGER BASE OF USERS...JIM).

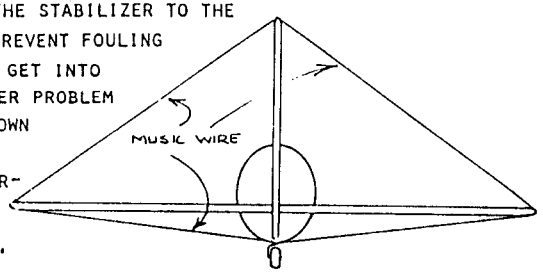
2. TOWHOOK POSITION ON THE TOWING AIRCRAFT: ANYWHERE IN THE CHORD OF THE WING, PREFERABLY CLOSE TO THE CENTER-OF-GRAVITY POSITION. THE INSTALLATION LOOKS LIKE THIS:



THIS GIVES MINIMUM PITCH CHANGE TO THE TOWPLANE WHILE THE GLIDER IS BEING BOUNCED AROUND IN THE TURBULENCE, OR WHEN THERE ARE NEW PILOTS WHO CAN GET OUT OF POSITION BEHIND THE TOWPLANE. THE RELEASE ALLOWS THE TOW PILOT, WHO IS PILOT IN COMMAND DURING THE OPERATION, TO CUT

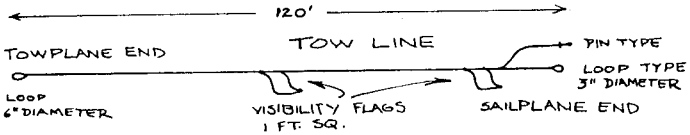
LOOSE WHEN THINGS REALLY GET HAIRY. ALL AIRCRAFT USED A DEDICTAED SERVO FOR THIS RELEASE RATHER THAN DUAL FUNCTION (I.E., RELEASE ON LOW THROTTLE). UNDER NO CIRCUMSTANCES USE THE TAIL TO TOW FROM; I TRIED IT TEN YEARS AGO - BAD NIGHTMARE!

3. THE TOWPLANE HAD BEEN MODIFIED SO THAT MUSIC WIRE RAN FROM THE TIP OF THE FIN TO THE TIPS OF THE STABILIZER TO THE UNDERSIDE OF THE FUSELAGE TO PREVENT FOULING OF THE TOWLINE SHOULD A GLIDER GET INTO A TAIL-LOW TOW POSITION. ANOTHER PROBLEM WOULD BE THE TOWLINE PUSHING DOWN ON THE ELEVATOR, AND THE SERVO NOT BEING STRONG ENOUGH TO OVERCOME THE WEIGHT AND FLIGHT LOADS IMPOSED BY THE SAILPLANE.

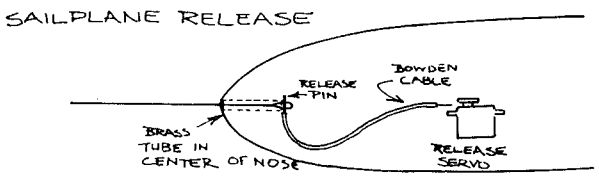


4. THE BEST TOWPLANE THERE IN MY OPINION WAS A CITABRIA POWERED WITH A TWIN-TARTAN ENGINE AND SPRING-DAMPED LANDING GEAR TO ABSORB ANY SHOCKS. I WATCHED THIS AIRCRAFT CONDUCT APPROXIMATELY 20 TOWS OF 1/4-TO 1/3-SCALE SAILPLANES. THE CITABRIA ALSO HAD FLAPS.

5. THE TOWLINE IS APPROXIMATELY 120 FEET LONG, AND MADE OF 80-POUND TEST BRAIDED NYLON FISHLINE. MONOFILAMENT IS NOT TO BE USED BECAUSE IT HAS TOO MUCH STRETCH AND CAUSES OSCILLATION OF THE GLIDER AND 'SNATCHING' ON TOW. THE LINE HAS A PENNANT IN THE CENTER AND AT THE GLIDER END, WHICH MAKES THE LINE EASIER TO SEE, AND TO CONFIRM THAT RELEASE HAS OCCURRED BEFORE THE TOWPLANE PERFORMS THE 'BREAK' TO RETURN FOR ANOTHER TOW.



6. THE GLIDER RELEASE MECHANISM: SEVERAL TYPES WERE IN USE, THE MOST BASIC BEING THE LOOP-TYPE RELEASE AS SHOWN BELOW.



THE TOW POINT ON THE GLIDER MUST NOT BE BELOW THE CENTER OF DRAG, AND SHOULD PREFERABLY BE ABOVE THE NOSE. TOWING BELOW THE CENTER OF THE NOSE LEADS TO OSCILLATION WHICH AT HIGH ALTITUDES MAKES THE GLIDER ALMOST IMPOSSIBLE TO CONTROL. SEVERAL TYPES OF RELEASE MECHANISMS ARE AVAILABLE WHICH USE A SPRING-LOADED, CAPTURED-PIN TYPE OF SYSTEM. I HAVE MADE ARRANGEMENTS TO IMPORT THESE ITEMS AND CAN SUPPLY THEM TO ANY INTERESTED PERSONS. THIS TYPE CAN RELEASE WITH MINIMAL LOAD ON THE SERVO, BUT UP TO 50-LB. PULL AT 90-DEGREES TO THE TOW AXIS, AND IS BY FAR THE BEST AND SAFEST SYSTEM.

7. LAUNCHING: THE TOW PLANE AND THE TOW LINE ARE HOOKED UP TO THE SAILPLANE WITH THE GLIDER BEING AT THE EXTREME DOWNWIND END OF THE TAKEOFF AREA. THE TOW PLANE TAKES UP THE SLACK IN THE LINE, AND THE TOW PILOT CONFIRMS WITH THE GLIDER PILOT THAT BOTH ARE READY TO BEGIN THE TOW. THEY STAND ABOUT 20 FEET APART; CLOSE ENOUGH TO COMMUNICATE EASILY, BUT FAR ENOUGH APART TO AVOID ANY POSSIBLE INTERMODULATION PROBLEMS WITH THE RADIOS. A WING MAN STABILIZES THE GLIDER WING TIP (ALL GLIDERS ARE EQUIPPED WITH A RETRACT UNIT AND WHEEL) AND THE TOWPLANE THEN GOES TO FULL POWER. THE WING MAN WALKS/TROTS ABOUT 10 FEET, KEEPING THE GLIDER STEADY, AND RELEASES THE TIP WHEN HE IS SURE THAT THE GLIDER CAN LOOK AFTER ITSELF. THE GLIDER THEN ROLLS ANOTHER 10 - 15 FEET AND BECOMES AIRBORNE. THE GLIDER IS THEN KEPT WINGS-LEVEL WITH AILERON, AND HELD ABOUT 2 - 3 FEET ABOVE GROUND FOR ANOTHER 15 - 20 FEET UNTIL THE TOWPLANE BECOMES AIRBORNE. THE TOW PLANE THEN CONCENTRATES ON A STEADY CLIMB OF ABOUT 10 DEGREES - NO STEEPER - WHILE AIRSPEED BUILDS UP ON BOTH, AND THEY CLIMB OUT TOGETHER. THE GLIDER PILOT USES ONLY AILERON AND CONCENTRATES ON KEEPING THE WINGS LEVEL AND THE GLIDER IN A HIGH-TOW POSITION ABOUT 20 FEET ABOVE THE POWERED AIRCRAFT.

IF A TURN IS REQUIRED, THE TOW PILOT CALLS WHICH WAY THE TURN WILL BE MADE, AND A GENTLE TURN OF ABOUT 200-FOOT RADIOUS IS INITIATED. THE GLIDER PILOT HOLDS THE HIGH TOW POSITION AT ALL TIMES AND MOVES THE GLIDER TO THE OUTSIDE OF THE TURN TO MAINTAIN LINE TENSION. IF THE GLIDER MOVES TO THE INSIDE AND THEN TO THE OUTSIDE, LINE SNATCHING, OSCILLATION AND POSSIBLE BREAKAGE WILL OCCUR.

THIS CLIMB IS KEPT UP UNTIL RELEASE HEIGHT IS ATTAINED. IF LIFT IS FOUND, BOTH GLIDER AND TOW PLANE CAN CIRCLE IN LIFT AS PER FULL-SCALE PRACTICE, AND RELEASE AT VERY HIGH ALTITUDES (1500 - 2500 FEET) IS EASILY POSSIBLE.

AT THE TIME OF RELEASE THE TOW PILOT AND GLIDER PILOT AGREE AND SEPARATE, BOTH LOOKING TO CONFIRM SEPARATION BY WATCHING FOR THE FLAG ON THE LINE TO SEPARATE FROM THE GLIDER. ONCE RELEASE IS CONFIRMED THE GLIDER 'BREAKS' RIGHT TO CLEAR THE TOW PLANE. BOTH PILOTS AGAIN CONFIRM THAT RELEASE HAS OCCURRED, AND THE TOW PLANE THEN DIVES AWAY TO THE LEFT TO RETURN TO THE FIELD AND LAND.

THE TOWLINE IS LEFT ATTACHED TO THE TOW PLANE FOR LANDING, UNLESS THE ULTIMATE SCALE EFFECT IS DESIRED, WHEREIN THE TOW PLANE MAKES A LOW FLY-BY PASS DROPPING THE LINE IN THE CENTER OF THE TOWING AREA AND THEN CIRCLES AND LANDS - MINUS THE TOWLINE.

DURING MY VISIT, I SAW TOWS BEING CONDUCTED IN VERY TURBULENT CONDITIONS AND 20-KNOT WINDS. THE SECRET TO SUCCESSFUL HANDLING IS TO RELY ON THE POWER OF THE TOWPLANE AND TO AVOID OVERCONTROLLING.

I SAW LINE BREAKS ON TAKEOFF (THE GLIDER PILOT DEPLOYS SPOILERS AND LANDS STRAIGHT AHEAD); ENGINE FAILURE AT VERY LOW ALTITUDE (THE GLIDER PILOT RELEASE, ALTERS HEADING ABOUT 10 DEGREES, THEN DEPLOYS SPOILERS AND LANDS); AND LINE FOULING THE WING OF THE GLIDER AFTER OSCILLATION HAD MADE THE TOW PROCESS UNCONTROLLABLE (TOW PILOT RELEASES AND THE GLIDER, TRAILING 100 FEET OF LINE AND FLAGS, LANDS AS IF NOTHING HAD HAPPENED!).

STILL MORE AEROTOWING, AND CONCLUSION...

NO DAMAGE OCCURRED DURING ANY OF THESE MISHAPS, AND I WAS ASSURED THAT SUCH PROBLEMS WERE NOT USUAL. IN FACT, THEY SEEMED TO BE STAGED FOR MY BENEFIT SO I COULD SEE ALL THESE THINGS HAPPEN!

EXPERIENCED PILOTS COULD DO ROLLS ON TOW! AND TOW INVERTED!

I HOPE THIS LETTER SETTLES SOME OF THE MYSTERIES OF AEROTOWING. WE CAN LEARN SOMETHING BY USING THE BACKGROUND OF THE BRITISH IN THIS AREA. I WANT TO STRESS THAT THEY HAVE BEEN DOING THIS FOR YEARS, AND IT REPRESENTS THE ONLY WAY THEY WOULD CONSIDER LAUNCHING A LARGE SAILPLANE. WINCHES ARE FROWNED UPON AS AIRPLANE BUSTERS, AND HIGHSTARTS JUST DON'T HAVE THE 'JAM' TO LAUNCH THESE AIRCRAFT.

OUR CLUB IS LAYING PLANS FOR EXTENSIVE USE OF AEROTOW NEXT SEASON, AND WE LOOK FORWARD TO BEING THE FIRST GROUP IN CANADA(THAT WE KNOW OF) TO USE AEROTOWING ON ANYTHING OTHER THAN A NOVELTY BASIS.

AS AN AIRSHOW OR DISPLAY ACT THIS WOULD LEAVE THE CROWDS CRYIN' FOR MORE. WITHOUT DOUBT THIS IS ONE OF THE THREE MOST EXCITING DEVELOPMENTS I'VE SEEN IN GLIDING IN THE LAST 15 YEARS.

I DO HAVE CONTACT WITH SEVERAL GROUPS IN ENGLAND AS A RESULT OF MY VACATION, AND THEY ALL HAVE OFFERED THEIR SUPPORT IN THIS JOINT EFFORT.

ONCE AGAIN, I'D LIKE TO MENTION THAT I HAVE PURCHASED A NUMBER OF AEROTOW RELEASE MECHANISMS WHICH I WOULD SELL TO PERSONS INTERESTED IN TRYING THIS VERY WORKABLE AND EXCELLENT WAY TO GET HIGH-ALTITUDE LAUNCHES THAT ARE ROUTINELY TWICE THE HEIGHT OF STANDARD WINCH LAUNCHES.

SHOULD 'THE IDEA' INCLUDE A TRIP TO WINNIPEG WE WOULD LOVE TO SEE YOU IN OUR AREA SO WE CAN VACUUM INFORMATION OUT OF YOUR MIND!

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EDITOR'S COMMENT:

WHAT A DELIGHTFUL IDEA AND EXCUSE TO COME OUT TO THE GREAT CANADIAN PRAIRIE PROVINCES WHERE I HAVE MANY GOOD FRIENDS, LEE. I WILL PONDER AT LENGTH ON THIS POSSIBILITY, AND ASSURE YOU THAT IF IT'S POSSIBLE, I WILL DO IT! INCIDENTALLY, I SHOULD MENTION THAT WHAT YOU HAVE DESCRIBED, WITH MINOR VARIATIONS, IS EXACTLY THE WAY I USED TO HANDLE THE FULL-SIZE AEROTOWS WHILE FLYING GLIDERS AT HARRIS HILL. IN THOSE CASES, THE RELEASES WERE ON THE TAILSKID OF THE TOWPLANE AND ON THE NOSE OF THE GLIDER. I, TOO, HAVE HAD ROPE BREAKS AT LOW ALTITUDE, AND ABORTED TAKEOFFS, AND ALL THE REST...AND THE PROCEDURES ARE ALMOST IDENTICAL WITH WHAT YOU HAVE DESCRIBED. ONE THING, THOUGH AT HARRIS HILL, WHERE A COMMERCIAL OPERATION IS OFTEN IN PROGRESS HOPPING PASSENGERS FOR SIGHT-SEEING RIDES, THE TOW ROPE IS MORE OFTEN THAN NOT LEFT ATTACHED TO THE TOWPLANE AT ALL TIMES, EVEN AT LANDING. THIS GREATLY SPEEDS UP THE PROCEDURE, ALTHOUGH IT IS A BIT TOUGH ON TOW ROPES, PARTICULARLY WHEN TOWING FROM ASPHALT OR BITUMEN RUNWAYS. IT HELPS TO LAND ON THE GRASS, AND TAKEOFF ON THE ASPHALT.

THANKS FOR THIS DEFINITIVE 'MAGNUM OPUS' LEE. OUR READERS WILL BE HAPPY TO CONTACT YOU, I'M SURE. OH, BY THE WAY, IN RE-READING THE ABOVE, I FORGOT TO NOTE THAT SOMETIMES ON THE TRAINING-TYPE SAILPLANES WE USED C.G. RELEASES, BUT ALMOST ALWAYS FOR AUTO-TOWING OR WINCH TOWING, AND NEVER FOR AEROTOWING.....Jim

'THE IDEA' LIVES!

RCSD PROFILE: HELMUT LELKE.....BOB RONDEAU

IN THE AIR IT LOOKS LIKE A COUPLE OF STICKS NAILED TOGETHER BY A CHILD TO SIMULATE AN AIRPLANE. UP CLOSE, YOU BECOME AWARE OF A FINELY-CRAFTED MACHINE DESIGNED AROUND A PARTICULAR TASK. I'VE WATCHED IT SEEMINGLY HANGING IN ONE SPOT FOR MINUTES...OR CRABBING FROM SIDE TO SIDE WITHOUT DIPPING A WING. IT TAKES THE STRONGEST WINCH, FLAT OUT, CAN PENETRATE 20-KNOT WINDS, AND STILL MANEUVER TO THE CENTER OF THE LANDING CIRCLE.

I'M TALKING ABOUT THE LITTLE SAILPLANE THAT HELMUT LELKE USED TO PLACE SECOND, THIRD AND FOURTH IN UNLIMITED, 2-METER, AND STANDARD CLASSES RESPECTIVELY AT THIS YEAR'S NATS. WHILE HIS STANDINGS SURPRISED MANY IN THE MODEL PRESS, IT WAS NO SURPRISE TO THE PEOPLE WHO HAVE BEEN FLYING WITH HELMUT AT CONTESTS HERE IN NEW ENGLAND.

HIS UNUSUAL SAILPLANE AND REMARKABLE FLYING STYLE WERE ALREADY WELL KNOWN TO THE REGULARS. THE RUNNING JOKE AT THE BEGINNING OF A MEET WENT SOMETHING LIKE THIS: "WELL, HELMUT'S HERE...MIGHT AS WELL GIVE HIM HIS TROPHIES AND WE CAN HAVE A FUN FLY."

AT FIRST, I ATTRIBUTED MOST OF HELMUT'S SUCCESS TO HIS HIGH-TECH ELECTROSTATIC AUTOPILOT, SEEING IT AS A MARGINALLY LEGAL GIZMO THAT WAS DOING HIS FLYING FOR HIM.

IT WAS AT A MEET LATE IN THE '84 SEASON THAT I BECAME AWARE OF THE SCOPE OF HIS FLYING SKILLS. HELMUT WAS LOADING HIS TROPHIES AND I WAS OUT IN THE FIELD GETTING SOME LAST-MINUTE AIR TIME. I WAS HAVING A GOOD FLIGHT, DRIFTING ALONG WITH THE WIND A LITTLE TOO FAR OUT, WHEN I REALIZED THAT THE WIND WHICH WAS IN MY FACE A FEW MINUTES AGO WAS NOW AT MY BACK AND PICKING UP SPEED. I TURNED MY 2-METER INTO THE WIND TO BRING IT A LITTLE CLOSER, AND IT DISAPPEARED IN THE GLARE OF THE SETTING SUN. I BLINKED AND FOUND IT AGAIN, AND ALL WAS OKAY UNTIL I REALIZED THAT THE CONTROLS WERE NOT REVERSED...IT WAS GOING THE OTHER WAY! BY NOW I HAD LOST ALL OF MY ALTITUDE AND THE SPECK THAT WAS MY GLIDER WAS FLOUNDERING WAY DOWN WIND. WHEN ALL SEEMED LOST, I HEARD SOMEONE BEHIND ME ASK: "NEED ANY HELP?" HELMUT TOOK THE TRANSMITTER WITH THE COMMENT: "GEE, YOU'VE GOT IT KIND OF LOW...WE'LL HAVE TO CALM IT DOWN TO GET IT BACK." WELL, HE FLEW THAT BEAT-UP OLD 2-METER STRAIGHT UP WIND (NOW A MINOR GALE) AND EVEN GAINED A LITTLE ALTITUDE. IT SEEMED THAT MY PLANE WAS TAKING ON SOME OF THE CHARACTERISTICS OF HELMUT'S AUTOPILOT FLYING...PENETRATING, THEN HANGING IN A SPOT, THEN RAISING, AND THEN PENETRATING AGAIN WITHOUT ANY WASTED ENERGY. WITH MY GLIDER SAFELY PACKED UP, I THANKED HELMUT FOR HIS FLYING DEMONSTRATION AND HEADED HOME. ON THE LONG DRIVE BACK, I DECIDED THAT IT TAKES MORE THAN GREAT SAILPLANES TO WIN CONTESTS.

IN PREPARATION FOR THIS ARTICLE I ASKED HELMUT TO GIVE ME SOME BACKGROUND ABOUT HIMSELF AND THE EVOLUTION OF "HEIDI", AS WELL AS SOME THOUGHTS AND THEORIES ON THE SPORT OF RC SOARING.

RCSD: "HOW LONG HAVE YOU BEEN BUILDING AND FLYING GLIDERS?"

H.L.: "I'VE ALWAYS BEEN INTERESTED IN GLIDERS. I GREW UP ON A FARM IN NORTHERN GERMANY, AND WITH A GREAT INTEREST IN ANIMALS. THE MAJESTIC BLACK AND WHITE STORCK WAS ONE OF MY FAVORITES. I WOULD WATCH IT FOR HOURS SOARING THROUGH THE SKY. I RECALL BUILDING MY FIRST MODEL AT

ABOUT THE AGE OF 10...IT WAS A SIMPLE HAND-LAUNCHED GLIDER PATTERNED AFTER SOMETHING I'D SEEN AT THE LOCAL HOBBY CENTER. I HAVE TO ADMIT I WASN'T A PURIST ALL MY LIFE. AT THE AGE OF 13, SHORTLY AFTER MY ARRIVAL IN THIS COUNTRY, I FOUND A PART-TIME JOB, AND AS SOON AS I'D SAVED ENOUGH MONEY I SPENT IT ON AN ENGINE. FOR THE NEXT YEAR OR SO IT WAS STRICTLY U-CONTROL FLYING. LATER, AFTER READING AN ARTICLE ABOUT GARY RITZ' A2 TOWLINE GLIDER, I WAS LURED BACK TO GLIDERS. I JOINED THE AMA AND FLEW MOSTLY A2 GLIDERS AND HALF-A FREE FLIGHTS. DURING HIGH SCHOOL MY INTERESTS BROADENED INTO ELECTRONICS AND I BUILT MY FIRST RADIO CONTROL SYSTEM. IT WAS A SINGLE-CHANNEL KIT AND INCLUDED A SINGLE-TUBE SUPER REGENERATIVE RECEIVER WITH A RUBBER BAND-DRIVEN ESCAPEMENT ACTUATOR. IT WAS A PRIMITIVE SYSTEM EVEN FOR THOSE DAYS AND ALL MY FLIGHTS WITH IT ENDED IN DISASTER."

RCSD: "HOW DIDYOU GET INVOLVED WITH THE ELECTROSTATIC AUTOPILOT?"

H.L.: "COMPETETIVE GLIDERS ARE GENERALLY TRIMMED OUT ON THE UNSTABLE SIDE, MAKING THEM A BIT MORE DIFFICULT TO FLY - ESPECIALLY OVERHEAD OR AT GREAT DISTANCES. A POORLY-PILOTED GLIDER IS SUBJECTED TO UNNECESSARY SPEED CHANGES WHICH RESULT IN AN OVERALL LOSS OF ENERGY. THE FUNCTION OF AN AUTOPILOT SYSTEM IN A GLIDER IS TO MINIMIZE THAT LOSS OF ENERGY, TO FLY THE PLANE MORE EFFICIENTLY, EVEN WHEN VISIBILITY IS POOR."

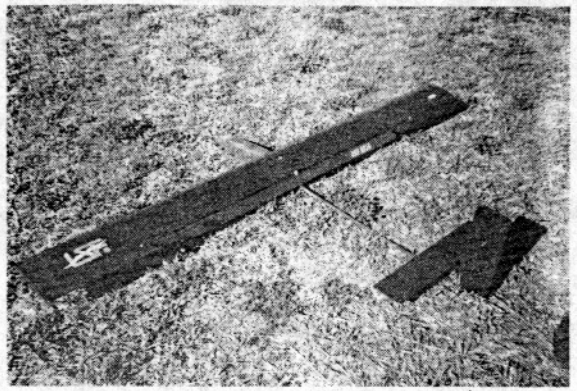
"AT THE ONSET, I DIDN'T REALLY APPRECIATE THE DIMENSIONS OF THE PROBLEM, AND MY EARLIER ATTEMPTS AT DEVELOPING AN AUTOPILOT SYSTEM WERE FULL OF FAILURES. MY FIRST A PPROACH WAS TO USE A PENDULUM DEVICE. THEN I ADDED LIQUID DAMPENING. LATER, THE COMLEXITY OF THE SENSOR SYSTEM INCREASED WITH AN OPTICAL SYSTEM WHICH WOULD SEEK OUT THE HORIZON. LATER STILL, CAME GYROS.

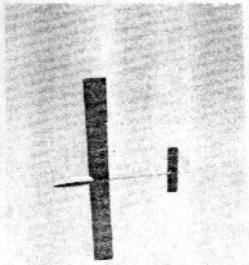
"SOMEWHERE ALONG THE WAY, DR. WAYNE KEENE, A FLYING BUDDY, DESCRIBED AN ELECTROSTATIC AUTOPILOT SYSTEM HE SAW DEMONSTRATED IN AN AMA MOVIE. THAT SYSTEM SUPPOSEDLY SENSED THE ELECTROSTATIC FIELD WHICH SURROUNDS THE EARTH. I'D NEVER HEARD OF SUCH A FIELD, BUT MY CURIOSITY WAS AROUSED. WAYNE REMEMBERED THE INVENTOR'S NAME AS MAYNARD HILL, A NASA SCIENTIST WORKING AT JOHN'S HOPKINS UNIVERSITY. I 'PHONED MR. HILL, AND HE KINDLY SENT ME SEVERAL ARTICLES HE HAD WRITTEN NEARLY A DECADE EARLIER. WITH THIS VALUABLE INFORMATION I DEVELOPED A CIRCUIT FOR MY NEEDS AND TESTED THE SYSTEM ABOARD ONE OF MY POLYHEDRAL GLIDERS."

RCSD: "WHAT WAS IT LIKE THE FIRST TIME YOU FLEW YOUR PLANE WITH THE E.A."

H.L.: "I CONDUCTED MY FIRST E.A. EXPERIMENTS IN JANUARY 1982. THE PLATFORM WAS A STANDARD CLASS POLYHEDRAL GLIDER. THOSE FIRST TESTS WERE DESIGNED FOR PITCH AXIS CONROL ONLY. IT TOOK ANOTHER 'PHONE CALL TO MAYNARD HILL, AND SEVERAL MONTHS OF ADDITIONAL EFFORT, BEFORE THE MAJOR E.A. PROBLEMS WERE RESOLVED AND I WAS READY TO GO TO DUAL-AXIS CONTROL: ROLL AND PITCH AXES.

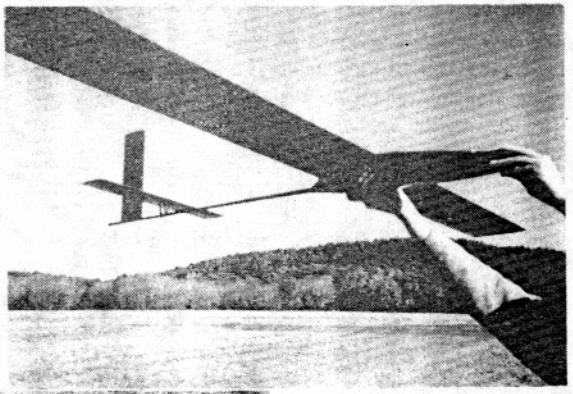
"IN ORDER TO CONDUCT THESE EXPERIMENTS, A GLIDER WITH AILERONS WAS REQUIRED, AND -ALSO- IN ORDER TO FULLY TEST THE ROLL AXIS CONTROL, THE WING SHOULD BE BUILT FLAT - NO DIHEDRAL - AND THEREFORE NO BUILT-IN AERODYNAMIC ROLL STABILITY. I WAS ANXIOUS TO GET THESE TESTS UNDERWAY, SO I SET OUT TO DESIGN A GLIDER THAT WAS FUNCTIONAL YET ALSO EASY TO BUILD. AESTHETICS TOOK A FAR BACK SEAT THIS TIME AROUND.

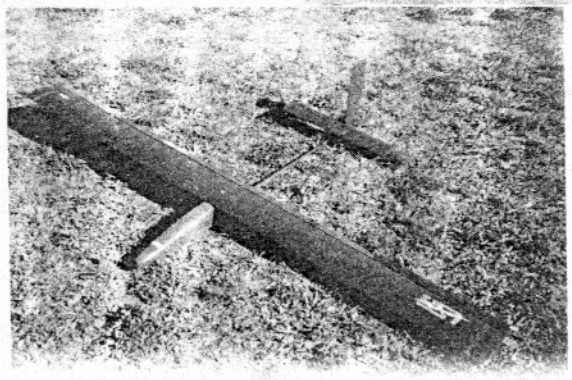




HEIDI PHOTOS

HELMUT LELKE





"THE RESULT WAS A GLIDER BASICALLY THE SAME SIZE AND SHAPE AS THE PRESENT 'HEIDI'. IT WAS BUILT MUCH LIGHTER AND WEAKER, HOWEVER, AND THE WING FOLDED ON LAUNCH ON A TYPICALLY BREEZY NEW ENGLAND SPRING DAY. BUT BEFORE IT CRASHED, IT DEMONSTRATED THAT THE E.A. PROVIDED EXCELLENT ROLL STABILITY, AND THAT DIHEDRAL WAS - IN FACT - UNNECESSARY."

RCSD: "DID IT REQUIRE LEARNING A NEW FLYING STYLE?"

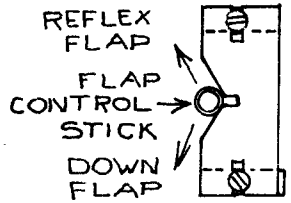
H.L.: "IT WASN'T SO MUCH THAT THE THE E.A. ITSELF REQUIRED A NEW FLYING STYLE. I BELIEVE FOR ME THE SWITCH TO AILERONS REQUIRED GETTING USED TO, SINCE UP TO THEN I HAD FLOWN MOSTLY POLYHEDRAL GLIDERS."

RCSD: "WHAT WERE THE DESIGN PARAMETERS FOR 'HEIDI'?"

H.L.: "THE PRESENT DESIGN FOR 'HEIDI' EVOLVED FROM THE EARLIER EXPERIMENTS WITH THE AUTOPILOT SYSTEM, AND MY LOVE FOR COMPETITION. ABOVE ALL, THE GLIDER HAD TO BE EASY TO BUILD AS WELL AS AERODYNAMICALLY CLEAN, HENCE THE EPPLER 205 WING AIRFOIL, THE POD-AND-BOOM FUSELAGE, AND THE STRANGE TAIL CONFIGURATION. IT HAD TO BE A 2-METER CLASS WHICH IS ALLOWED IN ALL CLASSES EXCEPT FOR THE UNMODIFIED STANDARD CLASS. IT HAD TO HAVE A WIDE SPEED RANGE SUPPLIED BY THE USE OF THE FLAPS. THE WINGS HAD TO BE STRONG ENOUGH TO WITHSTAND 'ANY' WINCH, AND -FINALLY- IT HAD TO BE FLUTTER-PROOF TO SURVIVE A HIGH-SPEED RETURN FROM A DISTANT THERMAL."

RCSD: "IS THERE ANYTHING UNUSUAL ABOUT YOUR RADIO?"

H.L.: "I USE WHAT IS NORMALLY THE THROTTLE CHANNEL TO CONTROL FLAPS. IN ORDER TO BETTER FEEL THE NEUTRAL POSITION, I'VE BUILT A GUIDE FOR THE THROTTLE STICK AS SHOWN IN FIGURE 1.



"THE GUIDE IS MADE OF 1/8" PLYWOOD AND SCREWED DOWN TO A COUPLE OF PIECES OF HARDWOOD BACKING WHICH, IN TURN, ARE SCREWED TO THE TRANSMITTER. SLIGHTLY ELONGATED SCREW HOLES IN THE PLYWOOD GUIDE ALLOW FOR FINAL ALIGNMENT.

RCSD: "WHAT FLIGHT CONDITIONS DO YOU PREFER?"

H.L.: "OF COURSE I PREFER UNSTABLE CONDITIONS WHICH ARE FAVORABLE TO THE FORMATION OF THERMALS. MY EXPERIENCE HAS BEEN THAT A NICE BREEZE GENERALLY HELPS IN GENERATIING A LARGER NUMBER OF THERMALS. AT CONTESTS I GENERALLY PRAY FOR WIND, AND HERE IN NEW ENGLAND I'M NOT OFTEN DISAPPOINTED. THE TERRAIN CAN BE ANOTHER IMPORTANT FACTOR IN GENERATING THERMALS; FOR EXAMPLE, I MUCH PREFER FLYING SITES WITH NEARBY TREE LINES, HILLS, OR OTHER OBSTRUCTIONS OVER WIDE OPEN FLAT FIELDS. THESE OBSTACLES ARE OFTEN A NECESSARY INGREDIENT IN THE FORMATION OF THE BUBBLE OF WARM WHICH, ON RELEASE, ULTIMATELY BECOMES THE THERMAL."

RCSD: "WHAT TECHNIQUES DO YOU USE FOR FINDING LIFT?"

H.L.: "I GENERALLY TAKE A GOOD LOOK AROUND BEFORE I LAUNCH. I LOOK FOR CLUES SUCH AS SOARING BIRDS, GROWING CLOUDS, OR LEAVES DISTURBED BY RISING AIR. ANOTHER VISUAL AID I OFTEN DEPEND ON IS A SIMPLE STREAMER TIED TO THE END OF THE TRANSMITTER ANTENNA: A 30" PIECE OF WOOL THREAD. ITS BEHAVIOR CAN PROVIDE IMPORTANT CLUES TO NEARBY THERMAL ACTIVITY. THE SENSE OF TOUCH ALLOWS ONE TO 'FEEL' THE SIGNS OF ACTIVITY IN THE AIR. A SUDDEN SHIFT IN WIND SPEED OR DIRECTION, JUST AS A SUDDEN CHANGE IN AIR TEMPERATURE MAY SIGNAL THE RELEASE OF A WARM BUBBLE OF AIR. AWARENESS OF THESE CLUES CAN BE USED TO LOCATE, AND ALSO ESTIMATE THE STRENGTH OF, THERMALS."

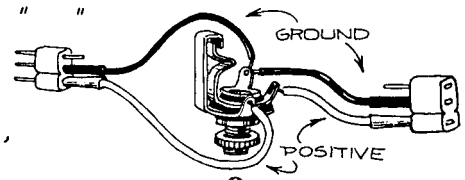
 (STAY TUNED NEXT MONTH FOR HELMUT'S UNUSUAL WING-BUILDING METHODS)

ON/OFF - CHARGING JACK .....TY SAWYER

PARTS NEEDED:

1 SERVO CABLE .....HOBBY DEALER
1 EXTENSION CABLE.....HOBBY DEALER
1 SUBMINIATURE 'PHONE JACK ....RADIO SHACK
1 PKG. (2) SUBMIN. 'PHONE PLUGS " "
2-3 FEET BRIGHT-COLORED RIBBON

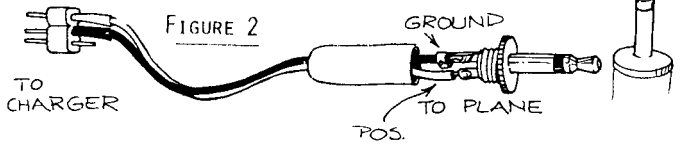
FIGURE 1



CONSTRUCTION:

CUT THE EXTENSION CABLE IN HALF, THEN WIRE AND SOLDER IT TO THE 'PHONE JACK AS SHOWN IN FIG. 1.

FIGURE 2



A CHARGING ADAPTER (SEE FIG. 2)

PULL THE RUBBER GROMMET OFF THE SERVO CABLE AND SLIDE THE PLASTIC HOUSING FROM ONE OF THE 'PHONE PLUGS ONTO THE SERVO CABLE. PLACE THE GROMMET BACK ON THE CABLE AND WORK THE HOUSING OVER THE GROMMET. SOLDER THE MIDDLE (GROUND) WIRE TO THE OUTER CONNECTOR OF THE 'PHONE PLUG. SOLDER THE RED (POSITIVE) WIRE TO THE CENTER TERMINAL OF THE PLUG. SLIDE THE HOUSING AND GROMMET OVER THE PLUG AND SCREW IN PLACE.

ON/OFF WARNING FLAG (SEE FIG. 3)

TAKE THE HOUSING OFF THE SECOND 'PHONE PLUG. FOLD THE RIBBON IN HALF AND TIE IT SECURELY TO THE PLUG CONNECTIONS. REPLACE THE PLASTIC HOUSING.

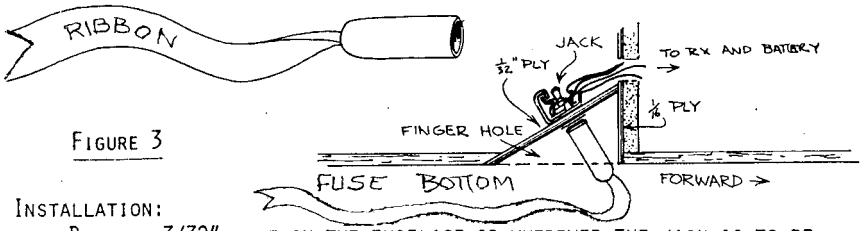


FIGURE 3

INSTALLATION:

DRILL A 3/32" HOLE IN THE FUSELAGE OR WHEREVER THE JACK IS TO BE PLACED. INSERT THE JACK IN THE HOLE FROM THE INSIDE, PLACE THE WASHER AND NUT OVER THE OUTSIDE THREADED PORTION AND TIGHTEN. PLUG IN THE ON/OFF WARNING FLAG, AND THEN HOOK UP THE BATTERY AND RECEIVER.

HOW TO USE THE SYSTEM

THE CHARGING ADAPTER PLUGS INTO YOUR CHARGER AND INTO THE 'PHONE JACK FOR CHARGING THE ON-BOARD BATTERY. PLUGGING THE OTHER PLUG INTO THE JACK WILL TURN OFF YOUR ON-BOARD RADIO EQUIPMENT BY DISCONNECTING THE BATTERY. THE RIBBON ON THIS PLUG ACTS AS A WARNING TO REMIND YOU THAT THE RADIOS ARE "OFF". IF YOU PREFER, YOU CAN PUT A RIBBON/FLAG ON THE CHARGING ADAPTER AND USE IT AS THE "ON/OFF" PLUG.

THIS ARRANGEMENT GIVES YOU A CHARGING JACK; ELIMINATES EXTERNAL SWITCHES THAT GET BUMPED INTO THE "ON" OR "OFF" POSITION WHEN YOU LEAST EXPECT IT; ELIMINATES INTERNAL SWITCHES THAT CAN BE FORGOTTEN; AND WARNS YOU AGAINST LAUNCHING WITH THE RADIOS OFF.

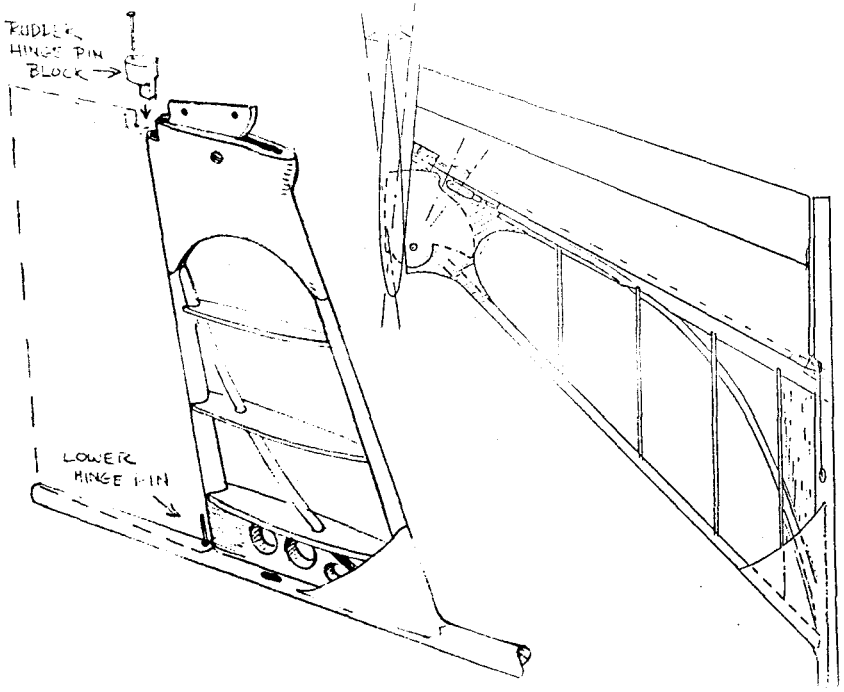
Bob Rondeau's BLP - More Details.....Bob Rondeau*

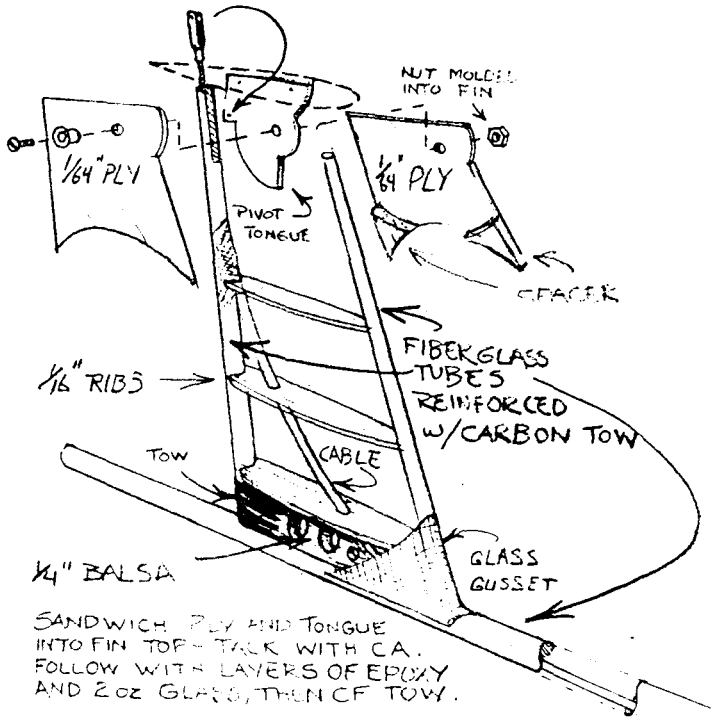
In the October issue, we saw the BLP featured on the cover of RCSD, and we saw some of the design philosophy inside that issue. Bob continues the story here.

Much of the BLP design evolved to solve the problems that have plagued my earlier sailplanes: things like cramped radio installations, tail heaviness, weak points in the airframe, etc.

In the tail boom I wanted to solve the problem of friction in the servo linkage and flex in the all-moving stab hinge. For general stiffening, I added 6 to 8 strands of 6K tow to the outer surface of the glass fishing pole blank. Each tow was laid on top of a coat of epoxy and another coat was applied over it. I spread the tow and removed excess epoxy with with a piece of 1/16th" music wire. It works best if you do half the circumference and allow it to cure before doing the second half. I finished with a coat of epoxy thinned with alcohol and sanded shoe-shine fashion with 220-grit paper. I used this method on the glass tubes that make up the leading and trailing edges of the fin, as well as on the boom itself.

The fin joint was another problem spot for me as it must transfer all of the tail loads in flight and those javelin landings. The rudder post tube is mounted into a hole in the top of the boom while the leading edge tube is filed to contour and glued to the boom surface (I didn't want to drill through the boom at that point). Most of the strength at this joint comes from a light balsa cleat - 1/4" x 1/2" - and gussets of carbon fiber tow, Kevlar and/or glass.





The top of the fin is also the stab pivot hinge. I worked out a flat disc shape on the drawing board; a shape that would give the needed throws yet one in which the large hinge surface or tongue would transfer twisting loads over a large area, and not just at the hinge pin. As mentioned last month, the tongue is a composite of Kevlar, carbon fiber and glass. I cut the 1/64" ply fin sides and drilled the pivot holes. With sides and tongue bolted together at the pivot, I tack-glued the assembly in place atop the fin. Here, I started adding layers of glass and carbon fiber tow. After a layer of 1.8-oz. Kevlar , I added one of CF (wrapped around leading and trailing edge) then a layer of 2-oz. glass cloth and another of tow...at which time the whole affair seemed pretty stiff.

One of the advantages of this type of construction is that I can now build a one-piece stab with no heavy rods to bend and chatter. The disadvantage seems to be in not having the pivot point centered in the airfoil. This would seem to allow for greater servo loads and will mean small changes in the tail moment. The servo linkage is basic Sullivan cable that makes the gentlest possible bend in the fin and enters the rudder post and connects to the pivot tongue, minimizing slop and friction.

I would like to hear from someone who has tried something similar, or who sees a fatal flaw in the design. *73 Main Street, Brattleboro, VT 05301

ALL-SINGING, ALL-DANCING, ALL-FLYING MIXER SCHEME...CHRIS ADAMS

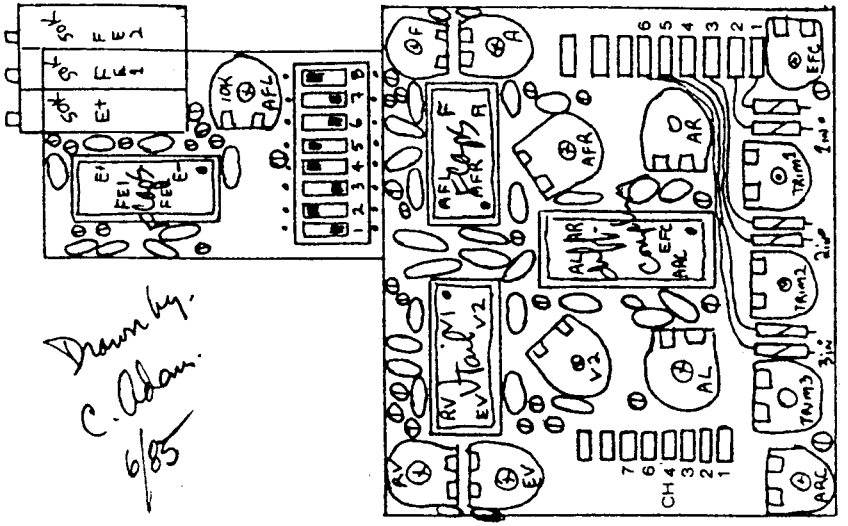
Chris Adams was a member of the San Fernando Valley Silent Flyers when I first met him. He was one of the top West Coast fliers, and an early LSF member, not to mention a Level V holder, as well as a designer, innovator and builder of interesting RC sailplanes...then he went away to become a chemist, submerging the soaring in the interest of excelling in still another field. Now a post-Doctoral researcher at Duke University, Chris has decided to come up for air and let us in on a little of what he's been doing lately. Aw heck, why not let him tell you himself? Heeeer's Chris.

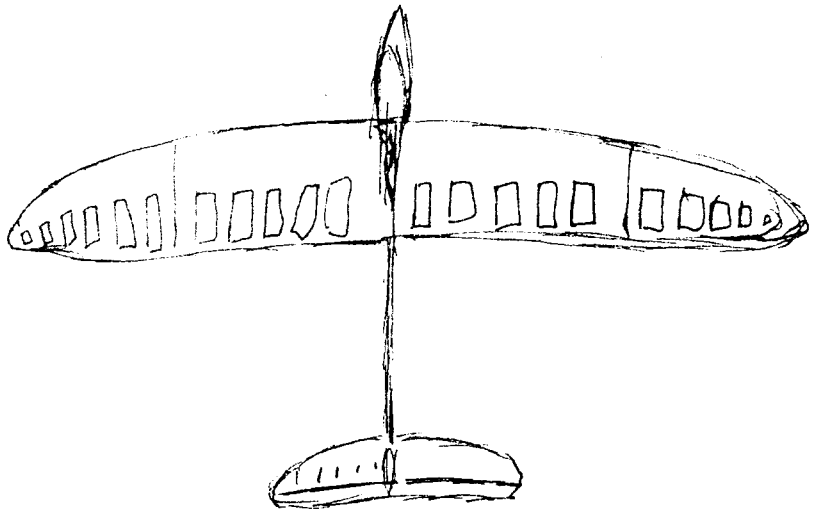
"DEAR JIM: I'LL TRY TO ANSWER A FEW QUESTIONS ABOUT MY TWO-METER SHIP. IT'S MY OWN DESIGN, HAS A THREE-PIECE WING, BOLT-ON STAB, AND IS MADE TO BE CARRIED IN A 1 METER X 8" X 6" BOX FOR TRAVELLING. IT USES THE QUABECK 10% THICKNESS - 3% CAMBER AIRFOIL, WHICH I HAVE FOUND TO BE AN EXCELLENT CHOICE. ALL-UP WEIGHT IS ABOUT 24 OUNCES. ORIGINALLY INTENDED FOR HLG, IT TURNED OUT TOO HEAVY FOR MY ARM, BUT STILL THROWS WELL. PENETRATION, THE KEY TO THE WAY I LIKE TO FLY, IS EXCELLENT. I'M PRESENTLY DESIGNING A 'FOAMIE' MUCH LIKE WHAT I HAVE DIAGRAMMED. THE TAIL WILL BE A SEMI-VEE, NOW THAT I HAVE THE CAPABILITY ON MY ACE TRANSMITTER. THE WING WILL BE SEGMENTED AND CUT-OUT, FULLY SHEETED WITH CARBON SPARS, LIKE A HOBIE HAWK. I AM FOREVER CRUSHING THE LEADING EDGE AND TOP SHEETING WHEN I CATCH THE PLANES... SO THAT'S THE REASON FOR THE FOAM.

"NOW TO THE QUESTION OF THE ACE TRANSMITTER. THIS TOOK ME ABOUT 8 WEEKS TO FIGURE OUT. THE ACE INSTRUCTIONS STARTED ME OFF, BUT THERE IS MUCH MORE TO THE LOGIC. I'M NOT SURE IT'S PERFECT, AND I'VE FOUND A FEW OTHER THINGS THAT WILL MAKE IT SIMPLER. I CONTACTED MA AND THEY ARE INTERESTED IN AN ARTICLE. ACE IS ALSO VERY INTERESTED. I HAVEN'T YET MADE THE CIRCUIT BOARD, AS I AM NOT AN ELECTRONICS EXPERT. MY ORIGINAL GOAL WAS TO USE THE STANDARD MIXER BOARD AND MOUNT EVERYTHING ON IT. AS YOU CAN SEE, I USED THE MIXER AND CAR BOARDS FOR EVERYTHING. I'VE ADDED A FEW MORE VARIABLE RESISTORS FOR CAMBER SETTINGS BUT THAT'S ALL. THE HARD PART WAS ADJUSTING IT! THERE ARE 14 CONTROLS FOR THE FUNCTIONS PLUS THREE FOR TRIM, AND SEVERAL ARE DEPENDENT ON THE OTHERS. THEN THERE ARE ABOUT FOUR SWITCHES THAT CONTROL OPTIONS. REAL CONFUCING, BUT IT WORKS. I WONDER HOW MANY PEOPLE WOULD BE INTERESTED IN ALL THE OPTIONS. I REALLY HAVE TO CHECK THEM OUT WITH AN F3B SHIP, BUT I DIDN'T WANT TO BUILD ONE UNTIL I HAD THE SYSTEM THAT WOULD DO WHAT I WANT. SEEMS LIKE A CATCH 22, BUT THE FIRST PART IS DONE.

"AVAILABLE FUNCTIONS ARE: NORMAL AND REVERSE; DUAL RATES; SEPARATE FLAPS & AILERONS WITH DIFFERENTIAL AILERON THROW; FLAPS & AILERONS ACTING TOGETHER AS FLAPS, BUT SEPARATE OUTBOARD AILERONS; ELEVATOR TRIMMING FOR FLAP ADJUSTMENT; COUPLED ELEVATOR INTO FLAPS (LIKE U-CONTROL); FLAPS DOWN FOR LANDING WITH AILERONS NEUTRAL, THEN ON LANDING POP-UP AILERONS ACTING AS SPOILERS, BUT NORMAL AILERON THROWS; VEE-TAIL MIXING WHICH ALSO HAS THE CAR MENTIONED ABOVE; POSITIONABLE CAMBER SWITCH FOR THERMALLING, SPEED AND DISTANCE; ...PLUS A SWITCH THAT RETURNS THE TRANSMITTER TO 'NORMAL' CONFIGURATION! THERE ARE ENOUGH SWITCHES TO BOGGLE THE MIND, AND IT REALLY IS CONFUCING WHEN YOU ARE USED TO ONLY RUDDER AND ELEVATOR!!!

TAKE CARE, CHRIS"





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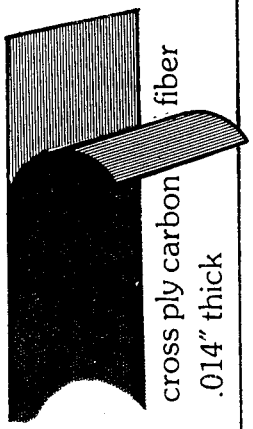

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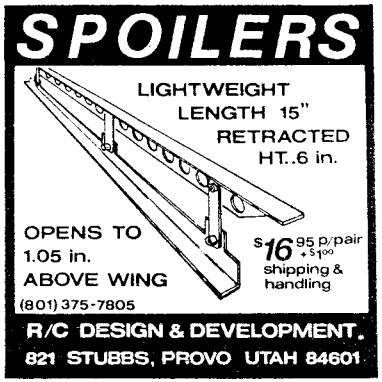

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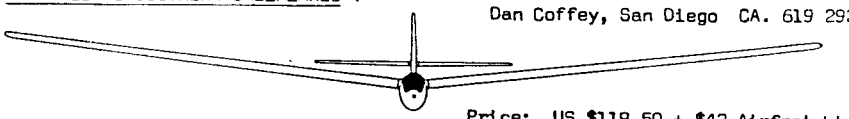

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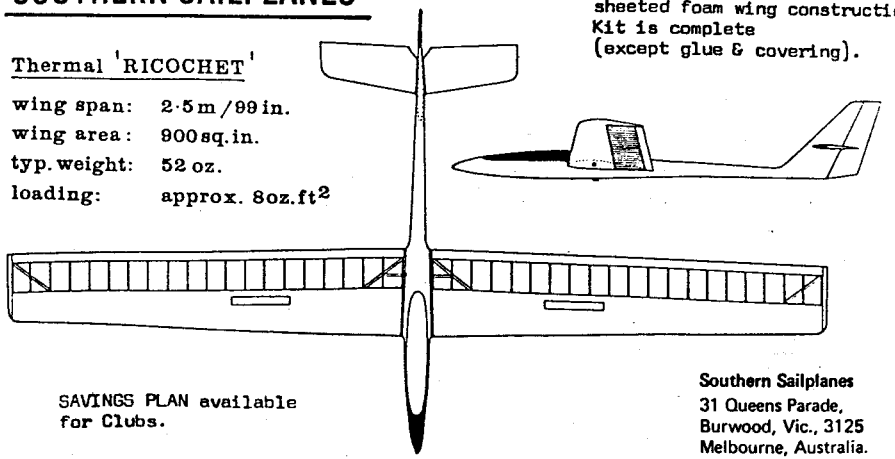

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