



APRIL 1985

VOL. 2 No. 4

WINGSPAN - VARIABLE:  
MAX. 127.6"; MIN. 91.3"

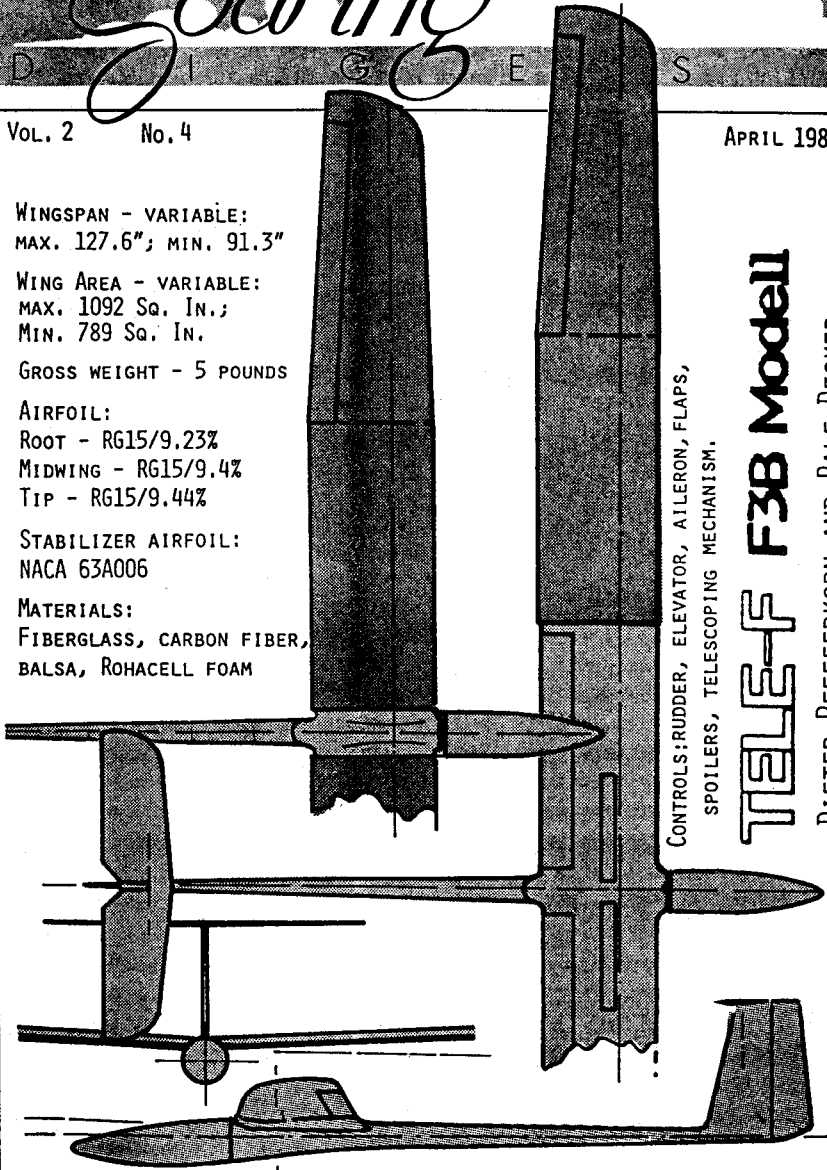
WING AREA - VARIABLE:  
MAX. 1092 Sq. In.;  
MIN. 789 Sq. In.

GROSS WEIGHT - 5 POUNDS

AIRFOIL:  
ROOT - RG15/9.23%  
MIDWING - RG15/9.4%  
TIP - RG15/9.44%

STABILIZER AIRFOIL:  
NACA 63A006

MATERIALS:  
FIBERGLASS, CARBON FIBER,  
BALSA, ROHACELL FOAM



CONTROLS: RUDDER, ELEVATOR, AILERON, FLAPS,  
SPOILERS, TELESCOPING MECHANISM.

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POSTMASTER: ADDRESS CORRECTION REQUESTED

## Hi Start

TODAY IS ONE OF THOSE DAYS THAT GLIDER PILOTS DREAM ABOUT ALL WINTER LONG. BLUE SKY, SCARCELY ANY WIND, AND WARM TEMPERATURES... OVER 50 DEGREES F IN THE SUN...WITH ONLY A FEW INCHES OF SNOW REMAINING ON THE GROUND. ONE OF THE FEW GOOD DAYS IN SEVERAL MONTHS OF WAITING FOR A CHANCE TO FLY, AND GUESS WHAT - MY BATTERIES WERE NOT CHARGED! ACTUALLY, I CAN'T TRUTHFULLY SAY THAT. THE TRANSMITTER PACK WAS CHARGED, BUT THE FLIGHT PACK WAS NOT. YESTERDAY, I TURNED ON THE FLIGHT PACK AND THE TRANSMITTER TO CHECK THEM OUT - YOU KNOW, SORT OF MAKING SURE THEY WOULD BE READY FOR TODAY - BUT I LEFT THE FLIGHT PACK SWITCH ON INSTEAD OF OFF, AND TURNED THE TRANSMITTER OFF. THIS MORNING, WHEN I GOT TO THE FLYING FIELD (IT WAS EMPTY AND DEVOID OF HUMAN HABITATION - UNUSUAL IN ITSELF) AND GOT READY TO FLY THERE WAS NO JUICE LEFT IN THE FLIGHT PACK. LESSON #1: ALWAYS CHECK AND DOUBLE CHECK EVERYTHING SEVERAL TIMES. EACH SPRING I LEARN THIS BITTER LESSON, AND EACH SPRING I VOW NEVER TO FORGET AGAIN...BUT, AS THIS HAS BEEN GOING ON FOR YEARS NOW, YOU CAN SEE THAT FALLIBILITY SPRINGS ETERNAL IN MY BRAIN. NEVERTHELESS, WE DID HAVE A GOOD DAY. MY YOUNG STUDENT, TY SAWYER (WHOSE DAD MANAGES THE LOCAL AIRPORT) BROUGHT ALONG HIS AQUILA WITH FULLY CHARGED BATTERIES, AND WE HAD A DOZEN OR SO GOOD FLIGHTS. TY MADE A COUPLE OF LEVEL I LANDINGS, AND GOT A FIVE-MINUTE THERMAL FLIGHT, SO HE'S ABOUT READY TO APPLY FOR THE LSF LEVEL I CERTIFICATE. ON THE OTHER SIDE OF THAT SAME COIN IS A TOTAL WIPE-OUT. HERE'S HOW IT HAPPENED: TY BROUGHT HIS Balsa USA SWIZZLE STICK, SO THAT HE COULD PRACTICE HIS LANDINGS AND TAKEOFFS WITH POWER. THE SHIP HAD BEEN CRASHED AND REPAIRED BEFORE, AND WAS PURRING NICELY ON ITS OS MAX 35. WE MADE SEVERAL FLIGHTS FROM A PAIR OF HOMEBUILT SKIS, AND THEY WORKED VERY WELL...ENABLING US TO TAKE OFF, LAND, AND TAXI RIGHT BACK TO THE STARTING POINT. IT WAS THEN I SUGGESTED THAT TY ATTEMPT SOME AEROBATICS. HE HAD BEEN DOING WELL WITH LOOPS AND STALL-TURNS. NOW IT WAS TIME FOR A ROLL. WELL, THE ROLL WAS ABOUT 3/4 COMPLETE WHEN CATASTROPHIC WING FAILURE OCCURRED (AT THE REPAIRED AREA) AND OL' SWIZZLE AUGURED IN. EVEN THE SNOW DIDN'T SAVE IT. ONE WING CAME FLOATING LAZILY DOWN LONG AFTER THE MAIN PART HAD TERMINATED THE FLIGHT. FORTUNATELY, RADIO WAS SAVED, BUT THE REST WAS TOO FAR GONE TO SAVE, EXCPET FOR THE ENGINE...AND THAT NEEDS A NEW CARBURETOR. NEEDLESS TO SAY, THE INSTRUCTOR IS GOING TO REPLACE THAT LOSS. I'VE SEEN GLIDER CRASHES ALMOST AS BAD, SO WE CAN'T BLAME THE POWER...YET I WONDER IF WE SHOULDN'T HAVE STUCK WITH THE SAILPLANE AFTER ALL?

FOR MORE INFORMATION ABOUT THE CARL GOLDBERG MEMORIAL ONE-DESIGN SOARING CONTEST (MENTIONED IN A PREVIOUS ISSUE) CONTACT BILL FORREY, CONTEST ORGANIZER, 5815 EAST LA PALMA, No. 281, ANAHEIM HILLS, CA 92807. TELEPHONE No. (714) 777-4514. I'VE BEEN INFORMED THAT PART OF THE FEES WILL BE DONATED TO MEDICAL RESEARCH AT THE REQUEST OF CARL'S FAMILY. THE GENTLE LADY WILL BE THE SAILPLANE USED (OR THE ELECTRIC VERSION FOR THE ELECTRIC EVENT) AND THE WEST COAST, MIDWEST, EAST COAST, AND SOUTH WILL HOST EVENTS ON AUGUST 31, AND SEPTEMBER 1, 1985... THE SATURDAY AND SUNDAY OF LABOR DAY WEEKEND.

## TELE-F, SAILPLANE ON THE COVER...A 'BREAKTHROUGH'?...

WITH THANKS TO SEAN WALBANK AND THE WHITE SHEET NEWSLETTER, I AM PLEASED TO BRING YOU THE LATEST IN GERMAN SAILPLANE DESIGN FOR F3B. THE SHIP IS THE JOINT PRODUCT OF DIETER PFEFFERKORN AND RALF DECKER, AND FEATURES TELESCOPING WINGS! HERE'S WHAT THEY HAD TO SAY ABOUT IT:

"FOR SOME YEARS RALF AND I HAVE BEEN DISCUSSING VARIABLE WING GEOMETRY FOR F3B MODELS. IN SPITE OF THE OBVIOUS ADVANTAGES THAT VARIABLE WING GEOMETRICS WOULD HAVE, WE ARE WELL AWARE OF THE FACT THAT SUCH A TYPE OF F3B MODEL MAY WELL BE TOO SOHISTICATED TO BE USED BOTH SAFELY AND RELIABLY IN COMPETITION. THE CHALLENGE TO DEVELOP SUCH A PLANE, HOWEVER, WAS ENOUGH TO INITIATE OUR ATTEMPT TO REALIZE IT.

"IN THE BEGINNING THREE DIFFERENT CONCEPTS WERE CONSIDERED: 1. AN OBLIQUE WING AS EXPERIMENTED WITH BY NASA FOR HIGH VELOCITIES UNDER M=1. 2. A FOWLER WING AS USED BY SEVERAL GROUPS (THE BRITISH 'SIGMA', THE SWISS 'AN66', THE 'SBLL' OF THE AKAFLEG BRAUNSCHWEIG, AND THE MU27 OF THE AKAFLEG MUNCHEN., AND 3. THE TELESCOPING WING AS USED ON THE 'FS29' OF THE AKAFLEG STUTTGART.

"FOR CONCEPT NUMBER 1, I MADE SOME FREE-FLIGHT STUDIES AND IT WAS MY FAVOURITE BECAUSE IT WOULD HAVE BEEN THE EASIEST TO ENGINEER. UNFORTUNATELY, WE ALSO REALIZED THAT SUCH A PLANE FOR R/C WOULD HAVE BEEN ALMOST UNCONTROLLABLE AS IT WOULD HAVE BEEN IMPOSSIBLE TO JUDGE FLIGHT DIRECTION WHEN THE WING IS TOLTED...CONCEPT NUMBER 2 WAS REJECTED BECAUSE WE FELT THAT NO RELIABLE DATA IS AVAILABLE ON THE PERFORMANCE OF FOWLER PROFILES IN THE REGION OF REYNOLDS NUMBERS WE WOULD NEED.

"BECAUSE OF THE REASONS ABOVE, WE FOCUSSED OUR DISCUSSIONS ON THE TELESCOPIC WING. ON THE THREE-VIEW, I HAVE BEEN RESPONSIBLE FOR DESIGNING THE WING WHILE RALF HAS DETAILED THE MOORING MECHANISM. APART FROM THE WING ITSELF, ALL THE OTHER PARTS OF THE PLANE WILL BE IDENTICAL TO THOSE USED ON THE 1983 WORLD CHAMPIONSHIP WINNING MODEL. AS CAN BE SEEN IN THE SKETCH, THE NEW WING WILL HAVE THE CAPABILITY TO CHANGE ITS WING AREA IN FLIGHT FROM 1092 SQUARE INCHES TO 798 SQUARE INCHES, WHICH WILL CHANGE THE WING LOADING FROM ABOUT 10.55 OZ. PER SQUARE FOOT TO 14.43 OZ. PER SQUARE FOOT. (I REDID THE CALCULATZONS...USING 2500 GRAMS AS ABOUT 80 OUNCES...JHG).

"MEANWHILE, THE DESIGN HAS BEEN COMPLETED, A STRESS ANALYSIS HAS BEEN PERFORMED; MAXIMUM DEFLECTIONS OF THE MOST CRITICAL WING PART - THE PART WHICH MOVES OVER THE CENTER SECTION - HAS BEEN PERFORMED USING A FINITE ELEMENT MODEL; AND THE PROTOTYPE SPAR WITH TELESCOPING MECHANISM HAS BEEN TESTED ON THE BENCH SUCCESSFULLY. BASED ON THE RESULTS OF THESE TESTS WE HAVE RECENTLY STARTED TO PRODUCE PLUGS AND MOULDS, WHICH WE WILL HPEFULLY COMPLETE DURING THE CHRISTMAS HOLIDAYS.

"WHETHER OR NOT THE PLANE WILL BE USED BY RALF DURING THE FORTHCOMING WORLD CHAMPS IN WAIKERIE WILL BE DETERMINED AFTER FLIGHT TESTING, WHICH IS ANTICIPATED TO TAKE PLACE IN MARCH '85. WHETHER OR NOT WE WILL MAKE THAT DATE DEPENDS ON THE DIFFICULTIES THAT WE HAVE TO OVERCOME BETWEEN NOW AND THE MAIDEN FLIGHT." (SIGNED) DIETER.

ANDY LENNON WRITES...

"I WAS INTRIGUED BY DON TYPOND'S COMMENTS IN THE JANUARY ISSUE. HERE'S MY COMMENTS WHICH WILL EITHER 'KEEP THE POT BOILING' OR 'SHED SOME LIGHT.' NEUTRAL POINT: A WING AND A TAILPLANE REPRESENT A PAIR OF AIRFOILS IN TANDEM. EACH HAS ITS OWN AERODYNAMIC CENTER, BUT THE COMBINATION HAS A MEAN AERODYNAMIC CENTER, AT WHICH THE TOTAL LIFT (AND DRAG) FORCES EFFECTIVELY ACT AND WHICH IS CALLED THE 'NEUTRAL POINT.' THIS N.P. LIES BETWEEN THE AERODYNAMIC CENTERS OF THE TWO AIRFOILS - CLOSER TO THE LARGER LIFT PRODUCER (NORMALLY THE WING) IN CONVENTIONAL AIRCRAFT. THE DEGREE OF INHERENT STABILITY IS CONTROLLED BY THE DISTANCE BETWEEN THE CENTER OF GRAVITY AND THE NEUTRAL POINT, WHICH IS AFT OF THE C.G., AND IS CALLED THE 'STATIC MARGIN.' MOVING THE C.G. AFT REDUCES THE STATIC MARGIN UNTIL THE C.G. AND THE N.P. COINCIDE, PRODUCING NEUTRAL STABILITY. FURTHER MOVEMENT OF THE C.G. AFT OF THE N.P. RESULTS IN INSTABILITY UNLESS COMPENSATION IS INTRODUCED... MORE ON THIS UNDER 'LIFTING TAILS.' C.G. LOCATION: THE C.G. IS NORMALLY LOCATED 25% TO 30% OF THE WING'S MEAN AERODYNAMIC CHORD (M.A.C.) FROM ITS LEADING EDGE. THE MORE REARWARD LOCATION IMPROVES ELEVATOR EFFECTIVENESS. INCIDENTALLY, THE N.P. OF 16 CONVENTIONAL FULL-SCALE AIRCRAFT, BASED ON FLIGHT TESTS, AVERAGED 35.4% OF THE WING'S M.A.C. FROM ITS LEADING EDGE. THE C.G. AHEAD OF N.P. PRODUCES A NOSE-DOWN COUPLE THAT INCREASES AS THE DISTANCE BETWEEN C.G. AND N.P. INCREASES. AIRFOIL PITCHING MOMENTS: MODERN AIRFOILS HAVE A NEGATIVE PITCHING MOMENT ABOUT THEIR AERODYNAMIC CENTERS (CMAC) THAT TENDS TO CAUSE THE WING TO NOSE DOWN. SYMMETRICAL SECTIONS SUCH AS THE NACA 0015, AND REFLEXED SECTIONS SUCH AS THE NACA 2R<sub>2</sub>12, HAVE NO PITCHING MOMENT, HENCE ARE USED IN TAILLESS AIRCRAFT. TAIL DOWNLOAD: TO BALANCE THE NOSE-DOWN PITCH PRODUCED BY THE C.G. LOCATION AHEAD OF THE N.P., THE HORIZONTAL TAILPLANE MUST EXERT A 'DOWN LOAD.' THIS IS ACHIEVED BY HAVING THE TAILPLANE AT A NEGATIVE ANGLE OF ATTACK RELATIVE TO THE AIR PASSING IT, SO THAT IT 'LIFTS' DOWNWARD. DOWNWASH: THE AIR FLOWING OVER AND UNDER A LIFTING WING GENERATES A DOWNWARD FLOW WHICH IS EQUAL AND OPPOSITE TO THE LIFT BEING GENERATED. A 'WAKE' COMES OFF THE WING TRAILING EDGE AND INFLUENCES THE AIR AROUND IT, AND THIS WAKE IS CALLED DOWNWASH. BOTH THE ANGLES OF THE WAKE AND ITS ASSOCIATED DOWNWASH ARE PROPORTIONAL TO THE LIFT COEFFICIENT AT WHICH THE WING IS OPERATING IN FLIGHT. A HEAVILY WING-LOADED MODEL, FLYING SLOWLY, OPERATES AT HIGH CL AND, IN CONSEQUENCE, PRODUCES A GREATER ANGULAR DOWNWARD WAKE ACTION AND INCREASED DOWNWASH. DOWNWASH INEVITABLY IMPINGES ON THE HORIZONTAL TAILPLANE. IF THE TAILPLANE'S CHORD IS PARALLEL TO THE FUSELAGE REFERENCE LINE (SOMETIMES CALLED CENTER LINE) IT IS OPERATING AT A NEGATIVE ANGLE OF ATTACK WITH RESPECT TO THE PASSING AIR DUE TO THE DOWNWARD ANGLE OF THE DOWNWASH AIR FLOW. THE DOWNWASH CAN BE REDUCED BY: A LIGHT MODEL WITH LOW WING LOADING FLOWN AT HIGH SPEED, AND AT A CONSEQUENTLY LOW CL; INCREASING THE DISTANCE BETWEEN THE WING AND TAILPLANE; AND BY RAISING THE TAILPLANE ABOVE THE WING TRAILING EDGE. 'T' TAILS MOUNTED ON HIGH ASPECT RATIO VERTICAL TAIL SURFACES ENCOUNTER LESS ANGULAR DOWNWASH. THIS LOCATION GETS THEM OUT OF THE FUSELAGE BOUNDARY LAYER AND, ON POWERED MODELS, CAN BE ABOVE THE PROP SLIP-STREAM FOR IMPROVED EFFECTIVENESS AND LESS AREA AND DRAG.

LENNON CONTINUES...

IT SHOULD BE NOTED, HOWEVER, THAT THE REVERSE OF THE ABOVE THREE FACTORS INCREASES THE DOWNWASH AMOUNT AND ANGLE OF DOWNWASH. DIVING: WHEN DOWN ELEVATOR IS APPLIED THE WING'S ANGLE OF ATTACK IS REDUCED, AS IS ITS CL, THEREBY REDUCING THE DOWNWASH ANGLE AND THE NEGATIVE ANGLE OF ATTACK OF THE HORIZONTAL TAILPLANE. ON A HEAVILY WING LOADED MODEL FLYING AT A HIGH LIFT COEFFICIENT, THIS REDUCED CL CAUSES THE DOWNWASH TO 'STRAIGHTEN OUT' CONSIDERABLY. A WING WITH A LOW PITCHING MOMENT AND WITH THE C.G. CLOSE TO THE N.P. WOULD REQUIRE VERY LITTLE TAIL DOWN LOAD, AND CONSEQUENTLY A LOW NEGATIVE ANGLE OF ATTACK OF THE HORIZONTAL TAILPLANE RELATIVE TO THE NORMAL DOWNWASH. THE 'STRAIGHTENED OUT' DOWNWASH COULD RESULT IN THE TAILPLANE ASSUMING A 'POSITIVE' ANGLE OF ATTACK, THUS PROVIDING UP LIFT WHICH FURTHER REDUCES BOTH THE WING'S CL AND THE DOWNWASH ANGLE. UNLESS UP ELEVATOR IS COMMANDED - 'DISASTER'.. (LIKE THE LADY WHO BACKED INTO THE ROTATING PROPELLOR). THE CURE IS TO MOVE THE C.G. FORWARD, AND TO ADJUST THE TAILPLANE INCIDENCE NEGATIVELY TO PROVIDE INCREASED DOWNLOAD, SO THAT A POSITIVE ANGLE OF ATTACK AND TAIL UP LOAD CANNOT OCCUR. LIFTING HORIZONTAL TAILPLANES: IN MY 'SALAD DAYS' OF FREE FLIGHT, I RECALL DESIGNING A MODEL WHICH HAD: A LOW THRUST LINE AND A FULLY COWLED ENGINE; THE WING MOUNTED ABOVE THE PROPELLOR SLIP STREAM; THE C.G. AT APPROXIMATELY 60% OF M.A.C.; A FLAT-BOTTOMED LIFTING TAILPLANE; AND DOWNTHRUST OF 3 TO 4 DEGREES SO THAT THE PROP SLIP STREAM HIT THE HORIZONTAL TAILPLANE AT A POSITIVE ANGLE OF ATTACK. THIS COMBINATION PROVIDED A STEEP, STRAIGHT CLIMB AT ABOUT 70 DEGREES TO THE HORIZONTAL WITH NO LOOPING TENDENCIES, AND A BEAUTIFUL FLOATING GLIDE. I LOST ONE SUCH MODEL OUT OF SIGHT. SOME AUTHORITIES, NOTABLY HAL DEBOLT, RECOMMEND LIFTING TAIL SURFACES WHICH PERMIT A C.G. AFT OF THE N.P. AND RESULT IN A LOWER TAILPLANE ANGLE OF ATTACK, HENCE LESS DRAG, BUT AT A POSITIVE ANGLE OF ATTACK RELATIVE TO THE DOWNWASH. WITH FURTHER AFT C.G., SAY 70% TO 80% OF THE M.A.C., A HIGHER ANGLE OF ATTACK OF THE TAILPLANE IS MANDATORY. IN A DIVE, WHEN BOTH WING CL AND DOWNWASH IS REDUCED, THE RESULT IS A SUBSTANTIAL INCREASE IN THE HORIZONTAL TAILPLANE ANGLE OF ATTACK, AND A RESULTING STEEP DIVE. THE CURE, AGAIN, IS IN FORWARD C.G. MOVEMENT. FULL-SCALE AIRPLANES DO NOT EMPLOY LIFTING TAILPLANES BECAUSE, WHEN FLAPS ARE DEPLOYED, THE RESULTING INCREASE IN WING CL AND DOWNWASH COULD CONVERT THE UPWARD TAIL LIFT TO DOWNWARD 'LIFT' AND CREATE SERIOUS INSTABILITY. DOWNWASH ANGLES AND WING CHARACTERISTICS BEHIND PLAIN AND FLAPPED WINGS CAN BE ESTIMATED WITHOUT THE USE OF HIGHER MATH BY REFERRING TO DESIGN CHARTS IN THE BOOK BY SILVERSTEIN AND KATZLOFF (NACA REPORT #684) PUBLISHED IN 1979."

(ANDY, THANKS MUCH FOR THE CLARIFICATION AND FOR TAKING THE TIME FROM YOUR BUSY SCHEDULE TO 'STRAIGHTEN OUT OUR DOWNWASH!' ANDY LENNON HAS WRITTEN FOR MODEL AIRPLANE NEWS AND OTHER PUBLICATIONS ON THE SUBJECT OF AERODYNAMICS AND WILL SOON HAVE A BOOK ON MODEL AIRPLANE DESIGN ON THE MARKET. GOOD LUCK WITH THIS AND YOUR OTHER VENTURES, ANDY, AND THANKS AGAIN FOR YOUR HELP.)

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MORE LETTERS FROM READERS...SLOPE SITES, ONE-DESIGNS, AND MORE...

MIKE HOLLAND FROM ST. JOHN'S, ARIZONA WRITES AS FOLLOWS: "DEAR JIM: IN RESPONSE TO THE REQUEST IN FEBRUARY RCSD FOR SLOPE SOARING SITES ON WHICH TO CONDUCT THE LSF 4-AND 8-HOUR DURATION FLIGHTS, I'D LIKE TO MENTION SOME LOCATIONS IN EASTERN ARIZONA WHICH WE WOULD LIKE TO SHARE WITH OTHER FLIERS. THESE SITES ARE EXCEPTIONAL FOR SUCH WORK. WE HAVE SEVERAL, AND THEY ARE FAIRLY EASY TO GET TO. I'VE ENCLOSED A COUPLE OF SNAPSHOTS TO GIVE YOU AN IDEA OF WHAT THEY LOOK LIKE. MOST OF OUR SLOPES ARE VOLCANIC ASH, COVERED WITH PRAIRIE GRASS FOR PADDING! THE ONES WE USE FACE SOUTH AND SOUTHWEST, WITH PREVAILING WINDS FROM THE SOUTH. THIS WINTER, THOUGH, WE GOT MORE SNOW THAN USUAL. SPRING, SUMMER, AND EARLY FALL ARE THE BEST TIMES FOR FLYING HERE... WIND SPEEDS VARY GREATLY, AND I'VE SEEN EVERYTHING FROM 2 TO 60 MPH ON MY HAND-HELD WIND METER. I'VE JUST COMPLETED TWO NEW PLANES FOR SPRING '85 SOARING: ONE IS THE CARRERA SB-10 WITH A 126" SPAN, AND THE OTHER IS A SCRATCH-BUILT 'PURANAS' WITH A FIBERGLASS POD AND BOOM - VERY SLIPPERY! THE PIX I SENT EARLIER ARE AT TWO DIFFERENT LOCATIONS. THE CLOSE-UP PHOTO IS A CRAFT-AIR FREEDOM - ALL WOOD, COVERED IN MICA FILM (A COVERITE PRODUCT...JHG). I OMITTED THE OUTBOARD RIBS, AND THE SPAN IS 67-3/4" (INSTEAD OF THE NORMAL 72" - JHG). IF ANYONE WOULD PREFER TO FLY IN THE CENTRAL PART OF ARIZONA, PLEASE HAVE THEM WRITE TO DICK SCAIF IN THE FLAGSTAFF AREA. HIS ADDRESS IS: P.O. BOX 146, SEDONA, AZ 85936. HIS TELEPHONE IS: (602) 282-1290. FOR ANYONE WHO'D LIKE TO FLY IN THE EASTERN PART WHERE I AM, PLEASE ASKE THEM TO WRITE TO ME AT P.O. BOX 1397, ST. JOHN'S, AZ 85936. MY TELEPHONE IS: (602) 337-2907. Y'ALL COME SEE US!"

ORLA LARSEN MOVED FROM VERMONT TO CALIFORNIA, AND HAS BEEN FLYING UP A STORM SINCE GETTING OUT THERE. IN THE RECENT DUST-IN ONE-DESIGN CONTEST, HE FLEW A BUZZ WALTZ DESIGN CALLED 'EL PRIMERO' (SEE PHOTO). HE IS DIRECTOR OF WIND FARMS FOR HIS COMPANY: CALIFORNIA WIND ENERGY SYSTEMS, INC., WITH 5 FARMS IN OR NEAR SAN FRANCISCO, TWO IN PALM SPRINGS (WHERE HE LIVES) AND ONE IN SAN DIEGO. ORLA PLANS TO BUILD AN EASILY-PACKED SLOPE SOARING SAILPLANE TO TAKE WITH HIM ON ALL THOSE TRIPS TO HIS VARIOUS WIND FARMS. HE SAYS: "IT IS FASCINATING TO STUDY THE DIFFERENCE IN AIRFOIL SECTIONS IN WIND GENERATORS. WE HAVE AN EXPERIMENTAL BLADE THAT WEIGHS THE SAME AND HAS THE SAME PLANFORM, BUT A NACA AIRFOIL, AND IT GIVES US 18% MORE ENERGY FROM THE WIND IN EXACTLY THE SAME REGIME AS THE WIND GENERATOR RIGHT BESIDE IT. TO ME, THIS IS ABSOLUTELY AMAZING." (GOOD SOARING, ORLA; JOIN THE CROWD OF AIRFOIL ENTHUSIASTS, MY FRIEND. YOU'RE BEGINNING TO LEARN-IN A VERY PRACTICAL WAY- WHAT A GOOD AIRFOIL CAN DO COMPARED TO AN AVERAGE ONE. HMMM...WONDER HOW ONE OF THOSE EPPLER OR WORTMANN 'FOILS WOULD DO? IN FACT, I DO HAPPEN TO HAVE THE PLOT OF A WORTMANN FX AIRFOIL DESIGNED FOR WIND GENERATOR BLADES, IF YOU'D LIKE IT. MORE DARNED FUN, ISN'T IT?)

BUD MOORE, JR. OF THE ORLANDO (FLORIDA) BUZZARDS, WROTE IN TO TELL US SOMETHING ABOUT THE SCALE SAILPLANES HE FLIES, AND OF A PARTICULARLY GOOD SYSTEM OF BRIDLING FOR LAUNCHING (SEE SKETCH). HERE'S BUD... "DEAR JIM: JUST A NOTE TO LET YOU KNOW HOW MUCH I LIKE THE DIGEST, ESPECIALLY THE NEW FORMAT... I AM ENCLOSEING A SKETCH OF MY SOLUTION TO THE BRIDLE HANGUP ON SCALE SAILPLANES. I BUILT THE TG-2 FROM STEVE MOSKAL'S PLANS, AND WHEN I FLEW IN THIS YEAR'S TANGERINE SOARING CHAMPIONSHIPS

LETTERS CONTINUED...

-AFTER RECEIVING THE HIGH STATIC SCORE- COULD NOT GET THE \*\$!@# BRIDLE TO RELEASE. I MUST ADMIT THAT I HAD NEVER FLOWN THE BIRD WITH THE STRUTS ATTACHED BEFORE, BUT AS I HAD THEM ATTACHED FOR THE STATIC JUDGING, I HAD TO LEAVE THEM ON FOR THE FLIGHTS. I EVEN MADE ONE GOOD LANDING WITH THE BRIDLE STILL ATTACHED, BUT GOT NO POINTS AS THE FLIGHT NEVER COMMENCED! I MODIFIED IT 'AFTER THE HORSE HAD GONE' AND HAVE FLOWN IT SUCCESSFULLY 15 TO 20 TIMES SINCE THEN WITH NO PROBLEM. HAVE HAD TWO FLIGHTS IN EXCESS OF 20 MINUTES. I SENT STEVE (MOSKAL) A ROUGH SKETCH OF THE SYSTEM, AND HE WAS THOROUGHLY SATISFIED...IN FACT, ASKED IF HE COULD PUBLISH IT IN THE S.O.A.R. NEWSLETTER, I'M SURE IT COULD BE IMPROVED UPON, BUT IT WORKS!

"I BUILD AND FLY A BIT OF EVERYTHING EXCEPT F3B, BUT MY FIRST LOVE IS SCALE. I AM CURRENTLY TURNED ON BY ELECTRIC, AND AM IN THE PROCESS OF BUILDING A PORTERFIELD COLLEGIATE. I HAD A LEISURE PLAYBOY WITH AN LT-50 BUT LOST IT AFTER ABOUT 30 BEAUTIFUL FLIGHTS. I HAD BEEN TIMING STAN PFOST ON A SAILPLANE FLIGHT AND HAD MY WRISTWATCH IN A STOPWATCH CONFIGURATION ... I LOOKED AT IT TO SEE THE TIME, AND THEN TOOK MY EYES OFF THE PLAYBOY TO RESET THE WATCH TO NORMAL. WHEN I LOOKED BACK, NO JOY ON THE PLAYBOY...WE COULD HEAR IT BUT NOT SEE IT. A BIG STORM CAME UP ABOUT THIS TIME, AND WE HAD TO DISCONTINUE THE SEARCH. I WENT UP IN A CUB ON THE FOLLOWING DAY AND LOOKED FOR ABOUT 30 MINUTES, BUT TO NO AVAIL. THIS HAPPENED IN OCTOBER, SO I DON'T HAVE MUCH HPPE OF RECOVERY. HAD THREE ACE BANTAM MIDGETS PLUS A FOUR-CHANNEL RADIO IN IT, PLUS ALL THE BATTERIES AND THE LT-50. NEXT STEP...ASTRO 15 FOR THE PORTERFIELD.

I AM ENCLOSEING MY RENEWAL CHECK, A ROSTER OF THE 'BUZZARDS' AND MY BEST WISHES FOR ANOTHER BANNER YEAR WITH THE DIGEST. SINCERELY, BUD."

(BUD, I APPRECIATE THE INFO ON THE BRIDLE, AND I KNOW THAT A LOT OF OUR SCALE FLIERS OUT THERE WILL BE THANKING YOU FOR IT. BY THE WAY, I HAD A CHANCE TO FLY TED DAVEY'S PLAYBOY A COUPLE OF YEARS AGO, AND FOUND THAT IT SOARED VERY, VERY WELL INDEED...ALMOST OUT OF SIGHT, TOO, BUT WE GOT IT BACK BEFORE IT DISAPPEARED. LUCKY! HAVE FUN, AND LET US KNOW HOW THE ELECTRICS ARE DOING DOWN YOUR WAY...)

JIM DECK OF VALPARAISO, INDIANA WROTE A COUPLE OF THOUGHT-PROVOKING PARAGRAPHS THAT I'D LIKE TO SHARE WITH YOU. "DEAR JIM: JUST A FEW WORDS TO STIMULATE DISCUSSION IN YOUR EXTREMELY GOOD NEWSLETTER: 1. HOW ABOUT A DISCUSSION OF THE IDEAL FIRST SAILPLANE? IS ANY KIT TODAY 'IDEAL'? SHOULD AN IDEAL KIT TEACH A BEGINNER TO BUILD AS WELL AS FLY? SHOULD IT BE 2-METER OR 100" (STANDARD). ARE THOSE ARTFS OF ANY USE AT ALL? WHAT IS 'EVERYONE'S' FIRST SAILPLANE? (I SUSPECT IT'S THE WANDERER, BUT THE GENTLE LADY IS COMING ON STRONG)...4. ALSO, FOR YOUR NEWSLETTER, HOW ABOUT AN EVENT EXCHANGE? FOR EXAMPLE, WE LIKE TO FLY AN EVENT CALLED 2-4-6-8. IT CONSISTS OF FOUR ROUNDS. UPON LAUNCHING, THE FLIER MUST DECLARE HIS TARGET TIME OF 2,4,6, OR 8 MINUTES BEFORE ONE MINUTE OF FLIGHT HAS EXPIRED. ONCE A PARTICULAR TIME IS CHOSEN, IT CAN'T BE CHANGED AGAIN ON THAT FLIGHT. THIS IS A FUN EVENT, AND I'D LIKE TO HEAR OF OTHERS... I FEEL I CAN'T CLOSE WITHOUT WARNING YOU OF THE HAZARDS OF HANDLAUNCH (WOW, WHAT A TEAM NAME, JIM...JHG) FOR GUYS OUR AGE. ONE OF OUR MEMBERS THREW HIS ARM OUT AND REQUIRED SURGERY FOR REPAIR. RE-MEMBER TO WARM UP AND STRETCH BEFORE THROWING. UNLIKE HIGHSTARTS, NEW ARMS AREN'T AVAILABLE FROM CRAFT-AIR! LOT'S OF LIFT (AND PUFFY CLOUDS)."

AND, STILL THEY KEEP COMING...

JACK DIETRICH WRITES US ABOUT LOW ASPECT RATIO WINGS: "TO COMMENT ON THE QUESTION BY ERIC MARSDEN IN THE FEB. '85 ISSUE REGARDING IMPORTANCE OF AIRFOIL SHAPES AND HIGH OR LOW ASPECT RATIO IN SAILPLANE WINGS: AFTER EXPERIMENTING ALONG THESE LINES FOR A YEAR NOW, ESPECIALLY WITH LOW ASPECT RATIO, I'M INCLINED TO AGREE WITH MR. MARSDEN...WITH QUALIFICATIONS, OF COURSE. IF YOU TAKE A HIGH ASPECT RATIO SAILPLANE WITH AN UNDER-CAMBERED AIRFOIL AND PUT IT UP AGAINST A LOW ASPECT RATIO MODEL WITH A FLAT BOTTOM AIRFOIL (ON A DAY WITH IDEAL SOARING CONDITIONS) THE LONGER WINGS WILL PROBABLY PREVAIL. HOWEVER, ON A PARTICULARLY WINDY DAY UNDER THE SAME CONDITIONS, I WOULD OPT FOR THE LOW ASPECT RATIO WING FOR SEVERAL REASONS. THE FIRST IS OBVIOUS: STRESS. I'VE SEEN MANY LONG WINGS FOLD ON TOW, BUT I'VE NEVER CRACKED A SHORT WING IN GUSTING WINDS ON TOW. THE SECOND REASON WOULD BE ALTITUDE GAIN ON TOW...A MUCH STEEPER CLIMB CAN BE ATTEMPTED WITH CONFIDENCE. THE THIRD REASON IS PENETRATION WHICH IS ALSO PARTICULARLY IMPORTANT ON A WINDY DAY, AND THIS IS POSSIBLE WITH THE THINNER AIRFOILS THAT CAN BE UTILIZED IN A WIDER CHORD WING. I'M TALKING ABOUT ASPECT RATIOS OF 4:1 AND 3:1. LET'S FACE IT; WIND IS MORE OFTEN THAN NOT A PROBLEM AT MANY FLYING SESSIONS. THE LOW ASPECT RATIO SAILPLANE WILL AT LEAST PROVIDE YOU WITH A GOOD BACKUP MODEL TO FLY."

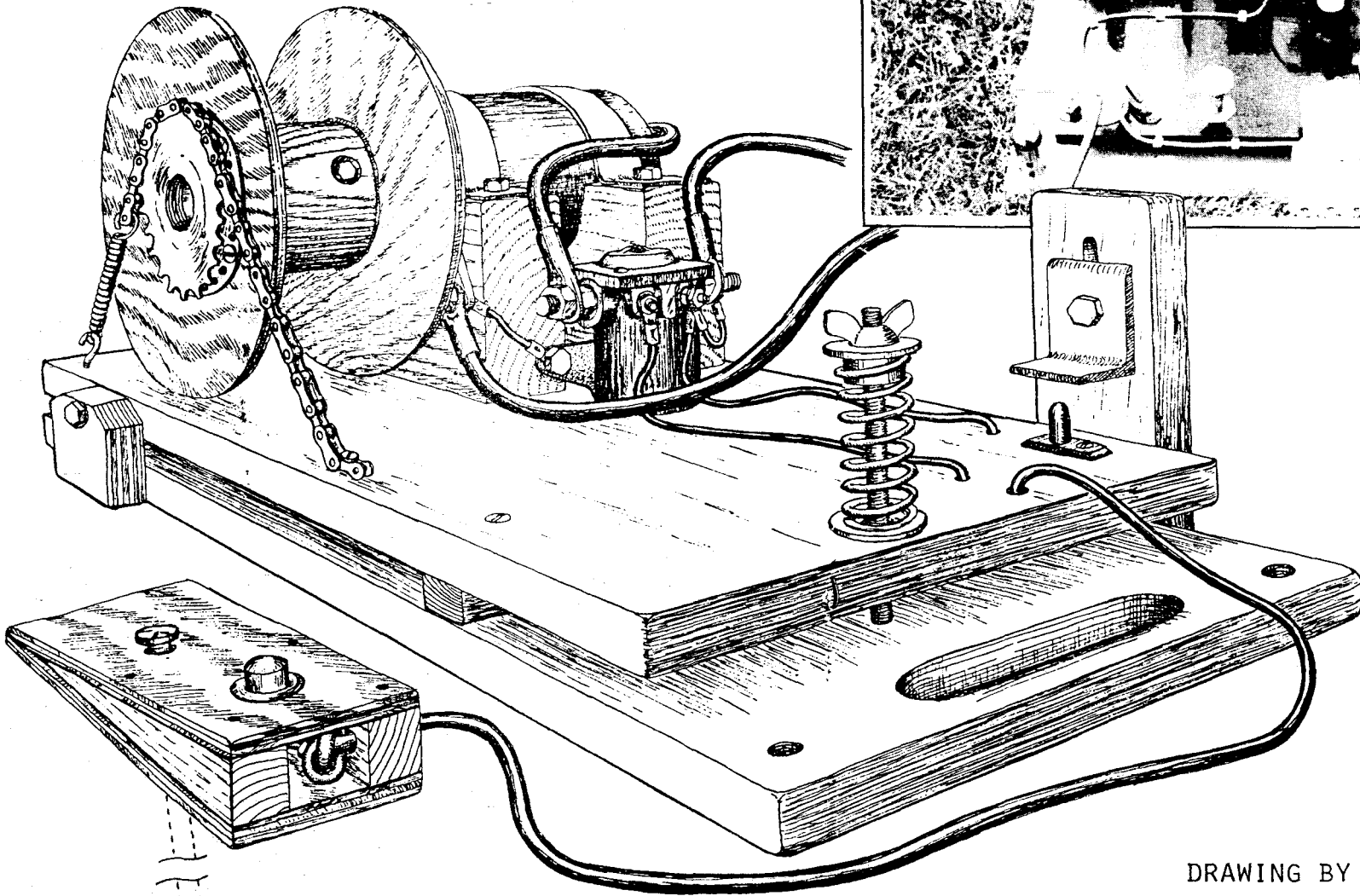
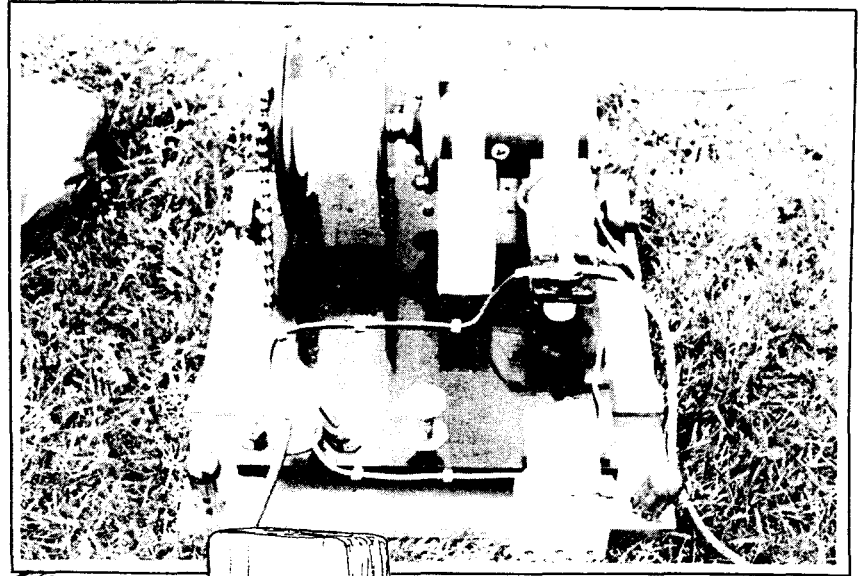
(JACK, THOSE ARE INTERESTING COMMENTS, AND I HAVE TO SAY THAT I SAW AN ANALYSIS OF ASPECT RATIO BY MARTIN SIMONS WHO HAS WRITTEN MANY ARTICLES ABOUT MODEL AERODYNAMICS...AND A BOOK ON THAT SUBJECT, TOO. HIS CONCLUSION IS THAT AN 'IDEAL' ASPECT RATIO FOR A TWO-METER SAILPLANE MIGHT BE AS LOW AS 5 OR 6 TO 1. THE REASON IS THE IMPROVEMENT IN REYNOLDS NUMBER OBTAINED WITH WIDE-CHORD WINGS. DRAG IS LOWER AT HIGHER R.N., AND THE WINGS HAVE GREATER AREA FOR A GIVEN SPAN, MEANING THAT THE WING LOADING IS LOWER, TURNS ARE TIGHTER, AND THERMALLING CAN BE BETTER. THE ONLY ADVANTAGE OF HIGH ASPECT RATIO WINGS IS THE REDUCTION IN INDUCED DRAG. LET'S HAVE SOME MORE COMMENT ON THIS - PLUS SOME DISCUSSION OF THICK AND THIN AIRFOILS AND VARIOUS SPAR DEPTHS THAT CAN BE USED WITH VARYING WING THICKNESSES...JHG). UNFORTUNATELY, WE DON'T YET HAVE A GOOD PHOTO OF THE WIDE-CHORD, LOW ASPECT RATIO SAILPLANE DESIGNED AND FLOWN BY JACK DIETRICH. THE PHOTO HE SENT IS NOT TOO CLEAR. I'VE ASKED FOR A 3-VIEW AND A BETTER PHOTO. READERS - SEND IN YOUR EXPERIENCES, PLEASE.

-----  
THE WRAM SHOW - RCSD HAD A BOOTH THERE...

THE 1985 WRAM SHOW (WESTCHESTER RADIO MODELERS) IN WHITE PLAINS IS ALWAYS A FUN SHOW AND IS ALWAYS PRACTICALLY INDISCRIABLE IN TERMS OF NUMBERS OF ATTENDEES, EXHIBITORS, AND FASCINATING GOINGS-ON. RCSD HAD A BOOTH BY ITSELF THIS YEAR - LOCATED ON THE RAISED STAGE AT ONE END OF THE HALL, CATER-CORNER FROM THE AMA BOOTH...AND IT WAS BUSY! THE LARGE BANNER WITH OUR LOGO WAS MADE BY GOOD FRIEND BOB CHENEY WHO ATTENDED THE SHOW WITH RCSD BUSINESS MANAGER PEGGY GRAY AND MYSELF. NON-STOP QUESTIONS, ANSWERS, GREETINGS FROM OLD FRIENDS, CHATS ABOUT EVERYTHING UNDER THE SUN, THE OPPORTUNITY TO 'GET AWAY' FOR A FEW MINUTES TO SEE THE OTHER DISPLAYS, THE STAGGERING BEAUTY AND QUALITY OF THE PLANES ON STATIC DISPLAY FOR JUDGING...THE COLOR, THE NOISE, THE ODORS... ALL UNMISTAKABLY PART OF A TRADE SHOW, AND VERY EXCITING. ALTHOUGH I'VE NOT YET BEEN TO TOLEDO, I CAN'T IMAGINE HOW IT COULD BE ANY BETTER THAN WRAMS. GUESS I'LL JUST HAVE TO WAIT UNTIL 1986 AND SEE!

ONE OF THE HIGH POINTS OF THE SHOW FOR ME WAS MEETING AND TALKING WITH DWIGHT HOLLEY, 1981 WORLD SOARING CHAMPION. HE'S OPENED A NEW BUSINESS IN CONNECTICUT: HOLLEY'S SILENT FLIGHT, SPECIALIZING IN ELECTRIC MODELS AND SAILPLANES. FOR THE LATEST AND BEST IN BOTH ELECTRIC AND SOARING, GIVE DWIGHT A BUZZ ON (203) 748-0083, OR WRITE TO HIM AT 151 CHESTNUT RIDGE ROAD, BETHEL, CT 06801. TELL HIM YOU SAW IT IN RCSD. BY THE WAY, HE SUBSCRIBED AT THE SHOW! SPEAKING OF THAT, WE BROUGHT ON BOARD 29 NEW SUBSCRIBERS, SOLD 100 BACK ISSUES, AND GAVE OUT 75 SUBSCRIPTION FORMS. IT LOOKS LIKE 1985 IS GOING TO BE A GROWTH YEAR FOR YOUR NEWSLETTER! BOB MARTIN OF BOB MARTIN'S RC MODELS WAS THERE TO SHOW AND TELL ABOUT HIS NEW 2-METER SAILPLANE, THE PUSSYCAT. (SEE PHOTO). BOB HAS ACQUIRED ALL OF THE FORMER HOUSE OF BALSA LINE OF PRODUCTS, INCLUDING THE 2T, THE 2x2, THE 2x4, ETC., SAILPLANES. HE ALSO PRODUCES THE HOBIE HAWK WHICH MANY OF YOU REMEMBER EITHER FONDLY OR WITH ANGER AND FRUSTRATION. THE KATIE, SUPER GRYPHON, AND COYOTE FILL OUT THE LINE. SCOTT CHRISTIANSON OF TOP FLITE WAS BEING A BIT CAGEY ABOUT HIS PLANS FOR NEW SAILPLANES AT THIS TIME, BUT YOU CAN BET YOUR BOOTS THAT HE'S GOT SOMETHING BEYOND ANTARES ON THE FIRE...AND NOT FAR AWAY. SCOTT PLANS TO EXTEND HIS CROSS-COUNTRY ENDEAVORS THIS YEAR AND WIND UP WITH A TRIP TO THE F3H CROSS-COUNTRY BASH IN SOUTH AFRICA IN NOVEMBER. THE GANG FROM AIRTRONICS WAS THERE AND SHOWING THE CUMIC AND ADANTE - TWO FINE SAILPLANES FOR BOTH THERMAL-DURATION AND F3B SOARING...GOOD MULTITASK MACHINES, AND VERY PRETTY. M.E.N. WAS SHOWING THE HOLLEY GOBBLER, DRESSED IN CHARCOAL AND VERY IMPRESSIVE. IT IS AVAILABLE IN KIT FORM, BUT A BIT DIFFICULT TO BUILD. TAKES TIME AND CARE...BUT A WINNER. CRAFT-AIR HAD THEIR FREEDOM SAILPLANE, A SLOPE SOARER OF BEAUTIFUL PROPORTIONS AND APPEARANCE. THEY HAD SEVERAL OTHER DESIGNS, TOO, BUT I WASN'T ABLE TO REALLY GET CLOSE ENOUGH TO TALK ABOUT THEM. BRIDI RC MODEL DESIGNS SOLD OUT OF THEIR WINDSURFER 2-METER AND THE TINY FLIPPER AND TERCEL HAND-LAUNCH GLIDERS DURING THE SHOW. SOMEHOW, I HAVE THE FEELING THAT MY OWN FLIPPER DONE IN TRANSPARENT RED MONOKOTE AND HANGING AGAINST THE BLUE BANNER ON THE WALL DIDN'T HURT SALES MUCH. LARRY SRIBNICK OF SR BATTERIES WAS SHOWING SOME OF HIS NEW WARES, INCLUDING THE NEW 900 MAH TRANSMITTER PACK THAT FITS INTO MOST TRANSMITTER CASES...AND NOT MUCH, IF ANY, LARGER THAN THE USUAL PACK IT IS INTENDED TO REPLACE. YOU CAN ALMOST DOUBLE YOUR BATTERY LIFE AND FLYING TIME WITH ONE OF THESE. AS YOU KNOW, SR HAS A FINE REPUTATION. I ALMOST FORGOT THAT BRIDI WAS SELLING HIS TRANSPARENT COVERING MATERIAL KRYSAL KLEAR KOVER. IT SHRINKS AND THEN IS GOOD FOR THE LIFE OF THE COVERING WITHOUT RE-SHRINKING, ACCORDING TO THE FOLKS AT THE BOOTH. IT CAN ALSO BE PAINTED, AND REALLY LOOKS GREAT ON THE SHIPS I SAW COVERED WITH IT. IN FACT, I BOUGHT SOME TO TRY ON MY NEXT SAILPLANE. HOBBY POXY (PETIT PAINT CO.) WAS THERE, AS WERE THE OTHER FINISHERS AND COVERERS LIKE COVERITE, WHO HAD THE FINE GEEBEE SERIES OF MACHINES ON DISPLAY. IN THE STATIC DISPLAY FOR JUDGING, JEFF TROY'S ZOEGLING (SG-38) PRE-WAR GERMAN PRIMARY GLIDER WAS A REAL KNOCKOUT. THERE WERE OTHER BEAUTIES, TOO, INCLUDING A LISTER KAMFSEGLER (BATTLE GLIDER) IN RED, PLUS A COUPLE OF OTHER SHIPS WHOSE NAMES AND BUILDERS I FAILED TO RECORD. THEY BOGGLE THE MIND, AND MAKE ONE FEEL LIKE A ZOMBIE BY DEADENING THE SENSORY INPUTS...TOO MUCH TO TAKE IN ALL AT ONCE IN A FEW MOMENTS STOLEN FROM BOOTH DUTY. ALL IN ALL A FINE SHOW. I HOPE TO MEET YOU THERE NEXT YEAR.

# the Dagwood Winch from New Zealand



DRAWING BY BOB CHENEY. © 1985

AUTO-TENSION WINCH FROM NEW ZEALAND  
"THE DAGWOOD"

THE WINCH YOU SEE HERE WAS INVENTED BY MURRAY DOUGLAS, GORE BAY, CHEVIOT, NORTH CANTERBURY, NEW ZEALAND. ROUGH DRAWINGS AND DESCRIPTION WERE FORWARDED TO ME BY GLEN SPACKMAN, ALSO OF NEW ZEALAND, AND A FREQUENT CONTRIBUTOR TO RCSD. THE FINAL DRAWING WAS PREPARED BY MY GOOD FRIEND AND FELLOW-CONSPIRATOR IN THINGS AERONAUTICAL AND ELECTRONIC - BOB CHENEY OF JACKSON, NEW HAMPSHIRE. ACCORDING TO GLEN, THE NAME "DAGWOOD" PERHAPS DERIVES FROM THE SIDEVIEW OF THE WINCH WHICH LOOKS A BIT LIKE A "DAGWOOD" SANDWICH.

WINCH LINE TENSION AND MOTOR TORQUE CAUSE THE TOP PLATE TO PIVOT ABOUT THE BOTTOM PLATE, AND A SIMPLE CUT-OUT SYSTEM OPERATES AGAINST VARIABLE SPRING TENSION (ADJUSTABLE) TO STOP THE MOTOR AT A PRE-SET PULL, OR TENSION. IT IS NO LONGER NECESSARY TO 'PULSE' THE WINCH TO GET A REDUCED PULL AT THE TOP OF THE LAUNCH, AND THE 'GO' BUTTON CAN BE HELD DOWN CONTINUOUSLY THROUGHOUT THE LAUNCH PHASE UNTIL RELEASE.

COMMENTS: IT IS A GOOD SPORT-TYPE WINCH BUT NOT REALLY SUITABLE FOR WORLD-CLASS F3B TYPE LAUNCHES OR USE. ALTHOUGH THE AUTO-TENSION SYSTEM WORKS WELL, MANY USERS TAKE THEIR FOOT OFF THE SWITCH/PEDAL AS THE SOLENOID CUTTING IN AND OUT CAN BE QUITE RAPID. BY ADJUSTING THE TENSION SETTING OF THE SPRING (TO 'SOFT') ONE CAN LAUNCH A BIG FLOATER INTO A MODERATE BREEZE AND 'KITE' TO A GOOD LAUNCH HEIGHT. THE BEAUTY OF THE SYSTEM IS THAT IT IS MADE MOSTLY OF WOOD, NUT-AND-BOLT ASSEMBLED, AND DOESN'T REQUIRE WELDING. IF YOU HAVE A DRILL PRESS, YOU CAN MAKE ONE.

THERE ARE NOW ABOUT 6 OF THESE WINCHES IN USE BY THE WELLINGTON (SOARING) CLUB, AND THE POWER VARIES AMONG THEM ACCORDING TO HOW GOOD A STARTER MOTOR HAS BEEN USED. THE LINES IN USE VARY ALSO, BUT GLEN SAYS HE USES ABOUT 40 METERS OF 64 KILOGRAM BREAKING STRENGTH LINE AT THE DRUM, FOLLOWED BY 160 METERS OF 'GARCIA BRAND' 59 KILOGRAM BREAKING STRENGTH BRAIDED DACRON SWORDFISH TROLLING LINE OBTAINED FROM THE USA. THE DACRON LINE HAS A GOOD CROSS-SECTION TO STRENGTH RATIO.

THE TRICKIEST PART TO BUILD IS THE HUB FOR THE LINE. GLEN USES A SET SCREW THAT LOCKS THE HUB TO A BENDIX SLIDE ON THE STARTER MOTOR SHAFT, AND A CIRCLIP OUTBOARD OF THE DRUM TO HOLD IT IN PLACE AGAINST SLIDING OFF THE SHAFT END.

THE WINCH DRUM CAN BE MADE FROM A ROLLING PIN OR A TOWEL ROLLER... ESSENTIALLY DENSE HARDWOOD. THE CORE OF THE DRUM IS ABOUT 3" IN DIA., AND 4" LONG. THE PLYWOOD DISCS ARE NOMINALLY 7½" IN DIA., BUT NOT CRITICAL. BEVEL OR ROUND DISC EDGES TO MINIMIZE LINE SCUFFING. DISCS ARE SCREWED AND EPOXIED TO THE WOODEN CORE...THIS IS IMPORTANT. ALSO EPOXY SCREWS AND SCREW HOLES.

THE BICYCLE SPROCKET/RATCHET SYSTEM STOPS THE LINE FROM UNWINDING DURING LAUNCH (WITH FOOT OFF THE SWITCH) AND ALSO PREVENTS BACKLASH OF LINE AFTER GLIDER RELEASES.

THE WINCH BASE IS ANCHORED TO THE GROUND BY MEANS OF LONG SPIKES DRIVEN THROUGH CORNER HOLES. THE FOOT SWITCH IS ALSO ANCHORED BY THE SAME MEANS - A SINGLE SPIKE, AS SHOWN. WHEN BRINGING 'CHUTE BACK TO LAUNCH AREA, DON'T FORGET TO RELEASE ONE END OF THE BICYCLE CHAIN...OR TO RE-ATTACH IT FOR THE NEXT LAUNCH.

"DAGWOOD" CONTINUED...

WINCH DIMENSIONS ARE:

MAIN BASE: 17"L. x 16"W.  
WINCH BASE: 16"L. x 12"W.  
PIVOT POINT: 3½" FROM ONE END OF BASE  
DRUM CENTER LINE: 4½" IN FROM PIVOT END; 4" ABOVE WINCH BASE  
WINCH MOTOR DIA.: 5½" MAX. DIA., AND 8.6" MAX. LENGTH (N.Z. ONLY)  
BATTERY: MAX. DIMENSION 30" IN ANY DIRECTION, INCLUDING LUGS  
SPRING: SCRAP FROM GARAGE, 3" LONG, 5/8" DIA., .080" DIA. WIRE.  
COMPRESSES 1/4" FROM MAX TO MIN TENSION. ONE TURN OF WING NUT GIVES ABOUT 4-POUND DIFFERENCE IN TENSION.

COMPONENTS ARE:

FORD LONG-SHAFT STARTER MOTOR (FROM JUNK YARD)  
SOLENOID: FORD PINTO  
FOOT SWITCH: NAPA (NATIONAL AUTO PARTS)  
BICYCLE REAR SPROCKET, HUB AND CHAIN (JUNKYARD)

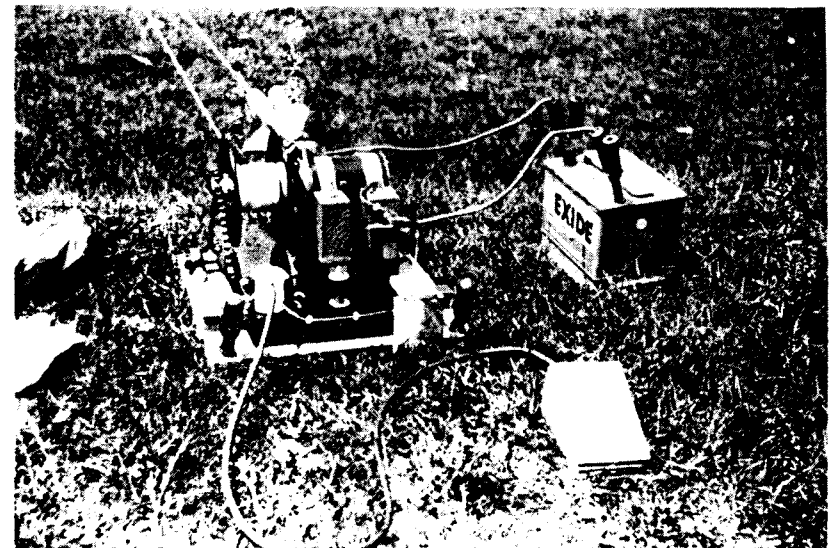
VARIATIONS:

PIVOT CAN BE PIPE HELD IN PLACE BY PILLOW BLOCKS, OR OTHER MEANS.

HELPFUL HINTS:

PARTS ARE LOCATED SO THAT BALANCE POINT IS JUST BEHIND PIVOT POINT  
BATTERY STANDS OFF TO ONE SIDE OF WINCH, AND IS CONNECTED BY HEAVY-DUTY LEADS AND CLIPS (JUMPER-CABLE SIZE).

MORE DETAILS OF CONSTRUCTION CAN BE HAD BY WRITING TO RCSD FOR XEROX COPY OF ORIGINAL CONSTRUCTION DETAILS. (SASE, PLEASE)





## Odds 'N' Ends

GEORGE'S HOBBY AND SPEED SHOP, P.O. Box 12, 22 MERRIMAC SQUARE, MERRIMAC, MA 01860, TELEPHONE No. (617) 346-8456, HAS A PIERCE PARAMOUNT FOR SALE. IT IS COMPLETELY FINISHED AND READY TO FLY. ALL IT NEEDS IS A RADIO. GEORGE SAYS HE HAS FLOWN IT IN A COUPLE OF CONTESTS, BUT IT'S TOO BIG (14½-FOOT SPAN) TO FLY ALL BY HIMSELF. HE HAS \$300 INVESTED, BUT WILL TAKE \$200-225 FOR IT. CALL OR WRITE IF INTERESTED.

### FOR SCALE ENTHUSIASTS:

GOOD FRIEND SEAN WALBANK, EDITOR OF THE WHITE SHEET,\* AN ENGLISH SOARING NEWSLETTER, HAS SENT SOME INFORMATION ABOUT MEMBERSHIP IN THE VINTAGE GLIDING CLUB OF GREAT BRITAIN. IN THE U.K., A FEE OF 4 POUNDS IS CHARGED, WHICH BRINGS FOUR EXCELLENT NEWSLETTERS WITH PHOTOS AND THREE-VIEWS EACH YEAR. THE VGC ALSO HAS A LIST OF TECHNICAL ARTICLES AVAILABLE FOR THE ASKING (SEE ENCLOSED) AT A RIDICULOUSLY LOW PRICE.

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## TECHNICAL TRIVIA AND OTHER TEMPTATIONS...

BOB CHENEY PASSES ALONG THIS ANSWER TO A QUESTION POSED IN A RECENT LETTER TO ME; QUESTION: I NEED HELP IN LOCATING A SOURCE FOR HARDENED WING RODS FOR A SCRATCH-BUILT PLANE. I WOULD LIKE TO BUY TWO 3/8" RODS 10½" LONG, OR TWO 5/16" RODS ONE FOOT LONG. IF YOU KNOW OF ANYONE THAT SELLS THESE, PLEASE LET ME KNOW...OR POSSIBLY MAKE A REQUEST THROUGH SOARING DIGEST FOR A SOURCE. ANSWER: TRY SOME HARDENED STEEL DRILL ROD OBTAINABLE THROUGH YOUR LOCAL HARDWARE SUPPLY. THIS IS AVAILABLE IN MOST OF THE COMMONLY DESIRED SIZES AND OUGHT TO SERVE THE PURPOSE QUITE WELL.

### THE WHITE SHEET

INCIDENTALLY, DON'T FAIL TO WRITE TO SEAN WALBANK FOR A SAMPLE COPY OF HIS NEWSLETTER THE WHITE SHEET...IT'S A DANDY, AND HAS A GREAT DEAL OF VITAL INFORMATION THAT YOU NEED, INCLUDING DOZENS OF THREE-VIEWS OF VARIOUS THERMAL AND SLOPE SOARERS, FLYING WINGS, ETC. USE THE ADDRESS GIVEN AT THE BOTTOM OF PAGE 12.

### FUN IN THE SUN

THE SUN VALLEY FLIERS c/o MATTHEW OLSON, 11459 NORTH 28TH DRIVE, APT. No. 1033, PHOENIX, AZ 85029, WILL BE HOLDING A FUN FLY ON APRIL 20TH AND 21ST. FIVE EVENTS WILL BE HELD, AND ANY CLASS SAILPLANE MAY BE FLOWN. JOIN THIS THIRD ANNUAL SUN AND FUN FLY BY WRITING OR CALLING MATT OLSON AT THAT ADDRESS.

### F3B TEAM FROM JAPAN

HIRO YASUI SENDS THIS INFORMATION ABOUT THE TEAM THAT JAPAN WILL SEND TO THE WORLD CHAMPIONSHIPS IN AUSTRALIA THIS MONTH: MANAGER: M. HASEGAWA; COMPETITORS: N. YAMAMOTO, H. SUGUWARA, AND M. FURUKAWA. HIRO SAYS HE MISSED THE SPEED TASK IN ROUND TWO OF THE TEAM SELECTION TRIALS LAST YEAR, FINISHING IN 5TH PLACE...BUT SAYS HE'LL BE BACK IN 1987! WE KNOW HE CAN DO IT BECAUSE HE WAS ON THE TEAM AT YORK IN '83.

### RC SOARING DIGEST FUTURE PLANS

THERE HAS BEEN CONSIDERABLE INTEREST IN SUCH ITEMS AS PLANS, AIRFOILS, BOOKS, AND OTHER SOARING AND SAILPLANE RELATED INFORMATION. MANY OF YOU HAVE WRITTEN ME ASKING FOR THIS KIND OF MATERIAL, SO I HAVE DECIDED TO BECOME AN INFORMATION SOURCE. THE FIRST BOOK ON THERMAL SOARING SHOULD BE AVAILABLE IN THE FALL, IF NOT BEFORE. IT WILL BE AN ANTHOLOGY OF SOME OF THE BEST ARTICLES THAT HAVE APPEARED IN VARIOUS NEWSLETTERS AND PUBLICATIONS OVER THE PAST SEVERAL YEARS. I ALSO HOPE TO EVENTUALLY HAVE COMPUTER SOFTWARE IN ADDITION TO THE OTHER ITEMS MENTIONED. PLEASE LET ME KNOW OF OTHER ITEMS YOU MIGHT LIKE, AND I'LL TRY TO OFFER THEM IF THEY FALL IN THE CATEGORY OF INFORMATION.

### NEW ZEALAND F3B TEAM

THE TEAM FROM NEW ZEALAND WILL CONSIST OF WARWICK GATLAND, ACCOMPANIED AND ASSISTED BY NIGEL CAVANAGH AND CHRIS TANK.

### CORRECTION:

BOB CHAMPINE'S RED BIRD II HAS NO AILERONS, ONLY FLAPS, POP-UP SPOILERS AND LARGER ELEVATOR. BOTH MODELS HAVE MYLAR STRIP INSET TO PRODUCE A SHARP TRAILING EDGE. THE FLAPS ARE SEGMENTED ON EACH SIDE OF THE WING AND DRIVEN BY A SINGLE PUSH ROD OPERATING 90-DEGREE BELL CRANKS, WHICH IN TURN OPERATE THE CONTROL HORNS (TWO PER SEGMENT).



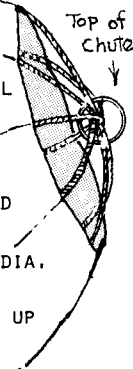
## 'CHUTE THE WORKS...BY BOB CHAMPINE

"ENCLOSED IS ONE OF MY LATEST WORN-OUT 'CHUTES. THIS ONE HAS LASTED FOR TWO SUMMERS. IT WAS BUILT TO MY SPECS (SEE DRAWING) BUT THERE IS ONE MORE IMPROVEMENT NEEDED. DURING ZOOM LAUNCHES ON A STRONG WINCH, THERE IS A LOT OF LINE TENSION ON RELEASE, AND THE 'CHUTE POPS WITH A LOUD 'POP'. AT THIS VERY INSTANT, THE TOW RING AT THE TOP OF THE 'CHUTE GOES INSIDE THE 'CHUTE THROUGH THE OPENING. DURING DESCENT, IT COMES OUT AGAIN, BUT NEVER COMES OUT THE WAY IT WENT IN, SO IT GETS TANGLED UP AND MAKES THE OPENING TOO SMALL TO RELIEVE THIS POPPING LOADING. THE ANSWER IS TO BRING THE LINES THROUGH THE TOW RING AND SHORTEN THE LINES OVER THE TOP JUST SO THEY ARE TIGHT WHEN THE 'CHUTE IS INFLATED. THEN, DO NOT WRAP THE LINES OR TIE THEM TO THE TOW LOOP; LET THE RING BE FREE. NOW, WHEN THE 'CHUTE POPS OPEN, THE RING WILL GO INSIDE, BUT WHEN IT COMES OUT IT WILL STRAIGHTEN ITSELF OUT AS THE 'CHUTE FULLY INFLATES DURING DESCENT.

"DURING MY MANY EFFORTS TO PRODUCE A GOOD WORKABLE 'CHUTE THERE WERE MANY FAILURES AND DISAPPOINTMENTS. THIS DESIGN IS PROVEN AND WILL STAND THE HARDEST OF LAUNCHES. FIRST, CUT OUT THE MATERIAL (NYLON) WITH A SOLDERING IRON. THIS MELTS AND SEALS THE EDGES OF THE MATERIAL SO IT WON'T FRAY. DON'T FORGET THE LINES THAT ARE SEWED AROUND THE EDGE OF THE SKIRT AND ALSO AT THE TOP AROUND THE EXIT HOLE. USE WELDED STEEL RINGS, AS IN THE SAMPLE ENCLOSED. MELT ALL ENDS OF THE RISER LINES WITH A MATCH SO THAT THEY WON'T FRAY. THE BOTTOM RING IS 3/32" DIA. SOLDERED MUSIC WIRE; ANYTHING SMALLER WON'T STAND STRONG WINDCHES.

"MAKE THE 'CHUTE PATTERN FROM 1/16" PLYWOOD AS SHOWN. ALSO, MAKE UP A CUTTING BOARD ABOUT 7" SQUARE, BECAUSE THE SOLDERING IRON WILL BURN THE SURFACE A LITTLE...I'M SURE YOU WON'T WANT YOUR FAVORITE BUILDING BOARD FULL OF BURNT HOLES AND MELTED NYLON! I NUMBERED THE NEEDED PANELS #1 THROUGH 8 SO THERE IS NO QUESTION ABOUT THE NUMBER OF PANELS. THE EXACT LENGTH OF THE RISER LINES IS NOT CRITICAL. THE ONES SHOWN ARE OK.

CHUTE PATTERN - MAKE FROM 1/16"  
PLYWOOD - MEASURE TO OUTSIDE  
OF LINES.



## WHAT'S THE BEST FIRST SAILPLANE...A MILLSTONE VALLEY ANSWER:

EVERY CLUB AND NEARLY EVERY PILOT SEEKS THE BEST FIRST SAILPLANE. THE MILLSTONE VALLEY SILENT FLYERS OF NEW JERSEY, ACCORDING TO A RECENT NEWSLETTER HAVE OPTED FOR THE AIRTRONICS OLYMPIC II FOR THE FOLLOWING REASONS: IT'S STABLE; IT'S FORGIVING; IT'S SLOW; IT INDICATES LEFT VERY WELL. THE OLY II IS INEXPENSIVE, IT'S EASY TO BUILD, AND THE KIT'S PARTS FIT TOGETHER WITH EXACTNESS. FINALLY, SAYS THE WRITER, ON A CALM DAY THE OLY II IS A VERY COMPETITIVE SAILPLANE.

STABILITY IS A BIG HELP WHEN YOU GET CONFUSED AND DON'T KNOW WHAT TO DO...SO JUST LET GO, AND THE SHIP WILL RIGHT ITSELF. FORGIVENESS IS A FINE QUALITY, TOO, BECAUSE IT MEANS THAT YOU CAN GET INTO SOME TIGHT SPOTS AND MAKE SOME HAM-HANDED BLUNDERS AS A PILOT, BUT THE PLANE WILL SURVIVE AND MAKE YOU LOOK GOOD. THE SLOWNESS GIVES YOU TIME TO THINK AND TO REACT AT A TIME IN YOUR DEVELOPMENT WHEN THINGS AREN'T QUITE SO AUTOMATIC AS THEY WILL BE LATER. A SAILPLANE THAT 'TELEGRAPHS' LIFT IS ONE THAT'S EASY TO WORK UP TO ALTITUDE BECAUSE YOU CAN SEE HOW IT REACTS. FINALLY, AS YOUR SKILLS DEVELOP, YOUR OLY II WILL SEEM LIKE

A COMFORTABLE OLD FRIEND, CALMING YOU AND KEEPING YOUR JITTER LEVEL AT A LOW SIMMER, SO YOU CAN COMPETE COMFORTABLY. TRY ONE AND SEE!

## CHAMPINE CONTINUED... KEVLAR WINCH LINE

"ABOUT WINCH LINES...HERK STOKELY HAS COME UP WITH SOME KEVLAR TOW LINE. IT IS SMALL, BUT GOOD FOR A 200-POUND PULL TEST. HOWEVER, IT MUST BE TIED WITH A GOOD KNOT. THE CANADIAN KNOT IS BEST, BUT A DOUBLE BLOOD KNOT WILL DO. WRITE TO HERK ABOUT KNOTS, AS HE IS THE EXPERT. HE HAS INSTRUCTIONS AND DRAWINGS. I HAVE BROKEN 170-180# NYLON, BUT NEVER THE KEVLAR. SINCE KEVLAR HAS NO STRETCH, USE THE KEVLAR (ABOUT 400 FEET) NEAREST THE MODEL, AND THE REST 160+ POUND TEST NYLON. THE SMALLER DIA. KEVLAR HAS NOTICEABLY LESS DRAG, AND HIGHER ZOOM LAUNCHES ARE POSSIBLE. YOU CAN ORDER IT FROM ASHAWAY COMPANY, TEL. NO. 800-556-7260. ASK FOR MR. BURNS. ONE SPOOL OF LINE IS 1,000 YARDS FOR \$61.50."

(FOR THOSE WHO WOULD LIKE TO WRITE AND ASK HERK STOKELY HOW TO TIE SOME GOOD KNOTS, HIS ADDRESS IS: 1504 HORSESHOE CIRCLE, VIRGINIA BEACH, VIRGINIA 23451. PLEASE ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE.

"BY THE WAY, JIM, I'M USING THE MICHAEL SELIG S4233 -136 -84 AIRFOIL ON MY NEWEST GEMINI, AND IT WORKS GREAT! SEE HERK STOKELY'S SOARTECH VOL. 3, JULY 1984 FOR DATA AND ORDINATES. TRY IT, YOU'LL LIKE IT." (ORDER SOARTECH AT \$5.50 FROM HERK AT THE ADDRESS ABOVE...JHG).

## WORLD CHAMPIONSHIPS F3b...WAIKERIE, SOUTH AUSTRALIA

THIS IS THE MONTH WHEN IT ALL COMES TOGETHER. TEAMS FROM ALL OVER THE WORLD WILL BE GATHERING AT WAIKERIE IN SOUTH AUSTRALIA TO TAKE PART IN THE BI-ANNUAL WORLD SOARING CHAMPIONSHIPS FOR RC SAILPLANES. EVERYONE IS CURIOUS ABOUT WHO WILL FLY WHAT, AND WHAT NEW DESIGNS THE LAST TWO YEARS HAVE SEEN EMERGE FROM THE MINDS AND WORKSHOPS OF EACH COUNTRY'S CHAMPIONS. MOST WILL BE 'HOME BUILT' IN THE SENSE THAT NON-PROFESSIONALS WILL DO THE DESIGN AND EXECUTION. A VERY FEW WILL BE THE PRODUCT OF PROFESSIONAL 'TEAMS' WHICH INCLUDE DESIGNERS/ENGINEERS, MOULD MAKERS, MATERIALS EXPERTS, AND THE LIKE. MOST COUNTRIES' TEAMS TAKE GREAT PRIDE IN THE SAILPLANES THEY BRING TO THE 'SHOW'. EACH TEAM WILL HAVE SEVERAL BACKUP SAILPLANES FOR EACH COMPETITOR ON THE TEAM, AND EACH BACKUP WILL BE AS CLOSE TO THE PRIMARY SHIP AS POSSIBLE: SAME RADIOS, SAME CONSTRUCTION, SAME MATERIALS AND SAME HANDLING. THIS MAKES SENSE FOR SEVERAL REASONS, NOT THE LEAST OF WHICH IS FAMILIARITY WITH PERFORMANCE AND HANDLING. ANOTHER IS A SOURCE OF PARTS, AND - OF COURSE - THE BASIC REASON IS REPLACEMENT OF A DAMAGED OR DESTROYED PRIMARY MACHINE.

ONLY A FEW YEARS AGO, POLYHEDRAL SAILPLANES WERE STILL COMPETITIVE IN THE HANDS OF SKILLFUL PILOTS, BUT IT'S DOUBTFUL THAT ANY PILOT ON ANY TEAM THIS YEAR WILL HAVE A POLYHEDRAL SAILPLANE. AILERONS, FLAPS AND ALL THE 'GO FASTS' THAT MONEY AND BRAINS CAN PRODUCE WILL BE MANIFESTED AT WAIKERIE. THERE WILL BE SOME FANCY NEW RADIOS AND FUNCTIONS TO BE SEEN, AND THERE WILL BE A HOST OF NEW AIRFOILS TRIED FOR THE FIRST TIME IN WORLD CLASS COMPETITION. SOME OF THE TEAMS WILL HAVE FLOWN HUNDREDS OF PRACTICE FLIGHTS AND SCORES OF PRACTICE HOURS...TOGETHER, AS A TEAM.

SOARING IS BOTH AN ART AND A SCIENCE. IT IS INEXACT ENOUGH TO MAKE A STRICTLY SCIENTIFIC APPROACH LESS THAN TOTALLY SUCCESSFUL, YET IT IS TECHNICAL ENOUGH TO MAKE EFFORTS IN AIRFOIL DEVELOPMENT AND MATERIALS TECHNOLOGY PAY OFF. NATURALLY, WE WISH ALL OF THE TEAMS GOOD LUCK, BUT I'M STILL ENOUGH OF AN AMERICAN TO WISH OUR OWN TEAM THE GREATEST SUCCESS OF ALL, WITH ITS INDIVIDUALS PLACING AT THE TOP. THEY HAVE A CHANCE...AND IN THE NEXT ISSUE, WE'LL FIND OUT WHAT HAPPENED.



SUMMIT PEAK, VERNON, AZ. IS FINE SLOPE SITE AT 8500' MSL



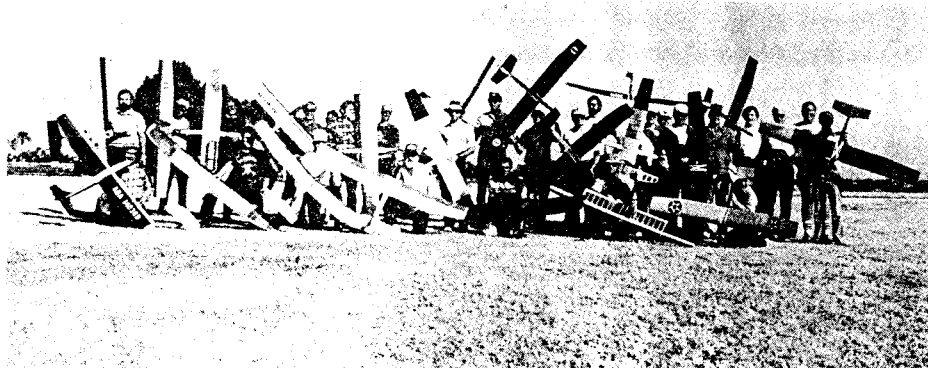
GREEN'S PEAK, SPRINGERVILLE, AZ OFFERS FINE SLOPE SITE AT 10,100' MSL



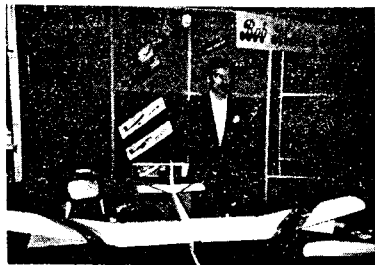
RCSD BUSINESS MANAGER - PEGGY GRAY - GRACES RCSD BOOTH AT WRAM SHOW



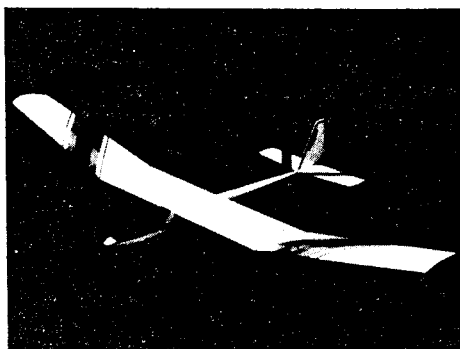
'FREEDOM' A CRAFT-AIR SLOPE DESIGN HAS SLIGHTLY SHORTENED WING (SEE TEXT).



LOOK AT THIS MOB AT RECENT CALIFORNIA DUST-IN ONE-DESIGN CONTEST. ALL 'EL PRIMERO'



BOB MARTIN OF BOB MARTIN RC MODELS SHOWS OFF NEW 2-METER 'PUSSYCAT' DESIGN.



ANYONE FOR A LITTLE LEG PULLING?

THE SPOILER, NEWSLETTER OF THE PIKE'S PEAK SOARING ASSOCIATION IN COLORADO PROVIDED A BIT OF FUN AND LAUGHTER WITH THIS 'SIMPLE' EXPLANATION OF ENGINEERING PROCEDURE THAT APPEARED IN THEIR FEBRUARY 1985 ISSUE. AS THEIR INTRODUCTION SAID: "AND YOU THOUGHT ONE AND ONE EQUALLED TWO!!!"

## Engineering procedure

Engineering Procedure *From an unknown but astute source:*

"Every new engineer must learn early that it is never good taste to designate the sum of two quantities in the form:

$$1 + 1 = 2 \quad (1)$$

"Anyone who has made a study of advanced mathematics is aware that:  $1 = \ln e$  and that:  $1 = \sin^2 x + \cos^2 x$

$$\text{further: } 2 = \sum_{n=0}^{\infty} \frac{1}{2^n}$$

"Therefore, Eq. (1) can be expressed more scientifically as:

$$\ln e + (\sin^2 x + \cos^2 x) = \sum_{n=0}^{\infty} \frac{1}{2^n} \quad (2)$$

"This may be further simplified by use of the relations:

$$1 = \cosh y \sqrt{1 - \tanh^2 y} \quad \text{and} \quad e = \lim_{Z \rightarrow \infty} \left(1 + \frac{1}{Z}\right)^Z$$

"Equation (2) may therefore be rewritten:

$$\ln \left[ \lim_{Z \rightarrow \infty} \left(1 + \frac{1}{Z}\right)^Z \right] + (\sin^2 x + \cos^2 x) = \sum_{n=0}^{\infty} \frac{\cosh y \sqrt{1 - \tanh^2 y}}{2^n} \quad (3)$$

"At this point, it should be obvious that Eq. (3) is much clearer and more easily understood than Eq. (1). Other methods of a similar nature could be used to clarify Eq. (1) but these are easily discovered once the reader grasps the underlying principles."

NO, NOT WEIRD...  
JUST DIFFERENT! VERY LOW  
ASPECT RATIO SAILPLANE  
HAS THIN, FLAT-BOTTOM  
AIRFOIL

