

RCMW-FSP

January 2016

Cover From
RC Modeler
December '89
Model by
Van Wilson

IN THIS ISSUE
CHIPMONK UC Stunt
SPOOKS all balsa FF
ORBITER HLG
QUADRUPLANE Rubber Scale
AIR WORLD Magazine Download

PLUS

.19-.25 Powered
ARCTIC TERN
By David E. Unruh

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**Next Month
Watch for
Bob Aberle's
newest project
that he has
named
the
Midiwatt-200**

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RCMW is the only model airplane magazine that provides all plans as full size PDF files in every issue. All pages of the monthly online magazine can be printed out, including the full size PDF files, using your own computer printer.

If you like to build models you will appreciate the ability to see again antiques, old classics, reproductions of kits, as well as new designs made for the reliable, lightweight Micro RC equipment currently available.

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Roland Friestad
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USA

For the Model Bulder and Flyer - January 2016 Issue



Full
Size
Plans



Well the big news this month, and it's not particularly good for those of us who like to build and fly model airplanes, is that the FAA (Friendly Aviation Administration) has put forth their rules on UAS (Unmanned Aerial Systems) model airplane flying in the NSA (National Air Space). Those guys sure like to use letters instead of words. I wonder why that is ?

At any rate, the rules strike me, and just about any other modeler, as being overly strict and unrealistic as applied to model building and flying. I understand that these guys are responding to the perceived threat of the idiots who fly quadcopters in an unsafe manner or maybe even to intentionally cause damage or harm, but it escapes me why everyone should suffer because of the stupidity or evil intentions of a very few. It sort of confirms that so-called motto of the FAA, "We're Not Happy Until You're Not Happy"

In line with that we have reprinted on pages 4 and 5 of this issue the form that the FAA has supplied for use by the police when submitting a report that one of us are flying in and unsafe or unauthorized manner.. I suggest you read it and be aware of what you will be asked and what you should reply if you are unfortunate enough to be confronted by one of the "Boys in Blue" while operating a DANGEROUS model airplane. Looks like there will be a large growth in the flying of models under about 8 ounces in weight. Contact the AMA for help.

Now on to more pleasant topics, the content of this issue. First up is an article and plan for the CHIPMONK, a UC Stunt model that was published in both Model Aviation, the AMA magazine and in Aeromodeller, the well known British publication. A big winner world-wide during the late 1970's.

Next is SPOOKS, a cute little all balsa Free Flight model originally intended for an .020 Cox engine. Would work quite well for that but probably also with a small electric motor powering it along with perhaps an RC system salvaged from one of the small ARF's. Lots of them are sitting around.

Then there is the ARCTIC TERN plan from the December 1989 issue of RC Modeler. Designed by Dave Unruh and built by Van Wilson, the prototype still hands on the ceiling of Van's cabin in Alaska.

Next is the ORBITER, a quick to build Hand Launched Glider that should give a lot of fun for you and some kids. Wonder if it could be adapted to catapult launching for those of us with aging arms ?

And now for something completely different, a scale ?? Mmodel of Matthew Sellers QUADRUPLANE. The Author doesn't claim perfect scale, or even that it's a competitive rubber powered Free Flight machine but is certainly would draw attention and comments at the flying field or school gym.

Our magazine download of last month was quite successful with about 400 subscribers downloading the Model Builder issue. This month's offering is not quite as well known. AIR WORLD was only published for 5 years or so in the 1940's but had a lot of info and designs by well known modelers. You can download the entire issue by using the link on page 24.

Keep 'em Flying,
Roland Friestad, Editor

LEO Guidance for Unmanned Aircraft Systems (UAS)

If you suspect a UAS operation is unsafe or unauthorized:



1. Locate the operator
2. Ask for registration and verify markings¹ on the UAS - Required for all UAS greater than 0.55 lbs
3. Ask operator for the type of operation and to present appropriate documentation (see reverse)
4. Interview operator and collect the following information:
 - Name, address, and positive ID of operator
 - Record Registration Number and the FAA Docket Number from Exemption or COA (see reverse)
 - Document time, place, and details of flight (take pictures and interview witnesses, etc)
5. Take action based on local Laws, Ordinances, Directives
6. Contact the FAA:
 - General inquiries – contact the Regional Operations Center (see below)
 - Investigation support – contact an FAA Law Enforcement Assistance Program (LEAP) Special Agent (business hours)

Local Protocol:

FAA REGIONAL OPERATIONS CENTERS:

Eastern	(404) 305-5150	DC, DE, MD, NJ, NY, PA, WV, VA	7-aea-roc@faa.gov
Southern / New England	(404) 305-5156	AL, CT, FL, GA, KY, MA, ME, MS, NC, NH, PR, RI, SC, TN, VI, VT	9-aso-roc@faa.gov
Western	(425) 227-1999	AK, AZ, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY	9-wsa-opsctr@faa.gov
Central	(817) 222-5006	AR, IA, IL, IN, KS, LA, MI, MN, MO, ND, NE, NM, OH, OK, SD, TX, WI	9-csa-roc@faa.gov
Washington	(202) 267-3333	National	9-awa-ash-woc@faa.gov

**** If you need immediate assistance from the FAA call (202) 267-3333 ****

Here is the front side of the report the local police will send to the FAA

Types of Authorized UAS Ops and Required Documentation:

Required documents must be in operator's possession and presented to law enforcement upon request per 49 U.S.C. 44103(d)

Model Aircraft

An unmanned aircraft that is 1) capable of sustained flight in the atmosphere, 2) flown within visual line of sight of the person operating the aircraft, and 3) flown for hobby or recreational purposes. Must be operated within **ALL** of the following parameters:

1. Strictly for hobby or recreational use
2. Must give way to manned aircraft
3. Less than 55 pounds ²
4. Operated in accordance with community based set of safety guidelines ³
5. If within 5 miles of airport, must notify airport operator and control tower (if tower)
6. Registration and Markings¹

Model aircraft operating standards are governed under P.L. 112-95 (Feb 14, 2012)

Non-Model / Commercial

Any UAS operation conducted for non-hobby or commercial purpose **OR** any operation that does not meet the parameters for Model Aircraft. Operator must possess **ALL** of the following documents:

1. Section 333 Exemption or Aircraft Certification ⁴
2. Certificate of Authorization (COA) ⁵
3. Aircraft Registration and Markings ¹
4. Pilot certificate ⁶

Public / Government

Public agencies or organizations that conduct UAS operations for a government function.

Operator must possess **ALL** of the following documents:

1. Certificate of Authorization (COA) ⁵
2. Aircraft Registration and Markings ¹

ALL UAS:

- Must have Registration and Markings¹ (required for all UAS greater than 0.55 lbs)
- Must not endanger persons or property on the ground
- Must give way to and not interfere with manned aircraft
- Must comply with all flight restrictions and Temporary Flight restrictions⁷
- Are subject to legal enforcement for Careless or Reckless operation

¹ Aircraft Registration and Markings: All UAS greater than 0.55 lbs are required to be registered, regardless of the type of operation. The operator must provide the registration certificate (paper or electronic) upon request and the UAS must be marked with registration or serial number. UAS purchased on or after December 21, 2015, and used exclusively as model aircraft must be registered prior to operating in the NAS. UAS that have been operated in the NAS by the current owner, and used exclusively as model aircraft prior to December 21, 2015, must be registered by February 19, 2016. To verify registration, contact a LEAP agent during normal business hours or the Regional Ops Center after hours.

² Aircraft is limited to no more than 55 pounds unless certified through design, construction and inspection by community based organization.

³ A membership based association that represents the modeling community and provides its members a comprehensive set of safety guidelines.

⁴ 333 Exemption: FAA Letterhead dated and signed with an Exemption Number and Regulatory Docket Number. Includes conditions and limitations such as: (Not required for UAS with an FAA Airworthiness Certificate or Public/Government Operators)

- Line of Sight: The UAS must be visible at all times to the operator using his or her own natural vision.
- Daytime only: Unless specifically authorized in the COA, UAS operations must be conducted during daytime only.

⁵ Certificate of Waiver or Authorization (COA): FAA Form 7711-1 signed by UAS Tactical Operations Section and includes FAA Docket Number. Addresses specific restrictions such as:

- Altitude: As stipulated on cover page of COA. Generally 400' or 200' (but can be higher).
- Proximity to Airports: As stipulated on COA.

⁶ Pilot certificate: All non-model/commercial operators must have an FAA pilot certificate (*Government agencies may self-certify pilots*)

⁷ Temporary Flight Restrictions (TFR) are common for Presidential movements, select sporting events, theme parks. Active TFRs are published here: www.tfr.faa.gov



Here is the back side of the report the local police will send to the FAA

Chipmonk 9

Peter Tindal



The CHIPMONK, a winner in the UC Stunt competitions of the 1970's was published in both Model Aviation and Aeromodeller magazines. Here is the construction article and plans from the Model Aviation issue of April 1977. The cover photos on this issue of RCMW comes from the April 1978 issue of Aeromodeller.

I FEEL it is time that my model should see the light in the hands of other modelers, as there appear to be too few semi-scale stunt models on the scene (excluding models a'la Rabe, which seem beyond the average modeler because of time commitments, myself included). I would pass on just two comments, one from Jim Mannall, six

times Gold Trophy winner: "It's the first model belonging to someone else that I have flown for a long time that I have felt happy with straight off the ground"; and the second from John Heanen, junior stunt Champion four years ago, now placing regularly in top five—"Beautiful!".

This could obviously be said about a lot of models but I think its record over the past couple of years adds weight to the above comments, plus the model has been modified from the number 7, which they both flew, to the number 9.

I decided just before the 1975 Nationals that the model I was flying could do with a lighter wing loading and, as I couldn't build any lighter, I decided to build bigger, thus the **Chipmonk** Number 9 evolved. The root chord went up by 1-1/2 inches. The tail was increased by some 20% and the wingspan was increased to 57 inches from 54,

giving a wing area of some 688 sq. in. This meant that even with a weight of 54 ozs. (which is quite heavy but easy to build to) it was still 12.75 sq. in. per oz. which falls well into the 11-1/4 sq. in. per ounce at which I have always aimed.

The Detroit style of wing, as explained to me some seven years ago by Neil Billington is still the quickest way of building a wing and, when modified to a D-box section, becomes very rigid as well. The method can be used for any wing design, symmetrical or not. (The only difference being that different templates are required for asymmetrical sections.)

Construction

First decide on the section of the wing to be used and make a template of the section between the leading edge and trailing edge at the point of maximum chord (Sketch A). The template should be at least 3 in. deep which makes it easier to hold and thus becomes less tiring on the wrist when cutting out the ribs.

I find with Detroit style that there is no need to put in any more ribs than normal, so decide on the number of ribs, double it and add 8 for the tips, to give the number of ribs required, usually about 70. Don't be put off by this large number as they can be cut out in approximately half an hour.

To cut the ribs I usually cut two sheets of 4 x 1/16" into pieces, the length of the template, then put them one on top of the other. I then mark (as Sketch B) 1/4-in. spaces from the bottom of the sheeting to the top and then cutting can commence.

Just lay the template on top of the pile and commence cutting; it will be found, with a sharp knife, that the ribs come off perfectly good enough to build with and require no sanding, etc., due to the fact that the leading edge sheeting and capping ribs cover them.

Next, take four ribs and lay them flat on a piece of paper where the leading and trailing edge have been drawn in section, first at the center section, second, at the last rib bay, as Sketch C.

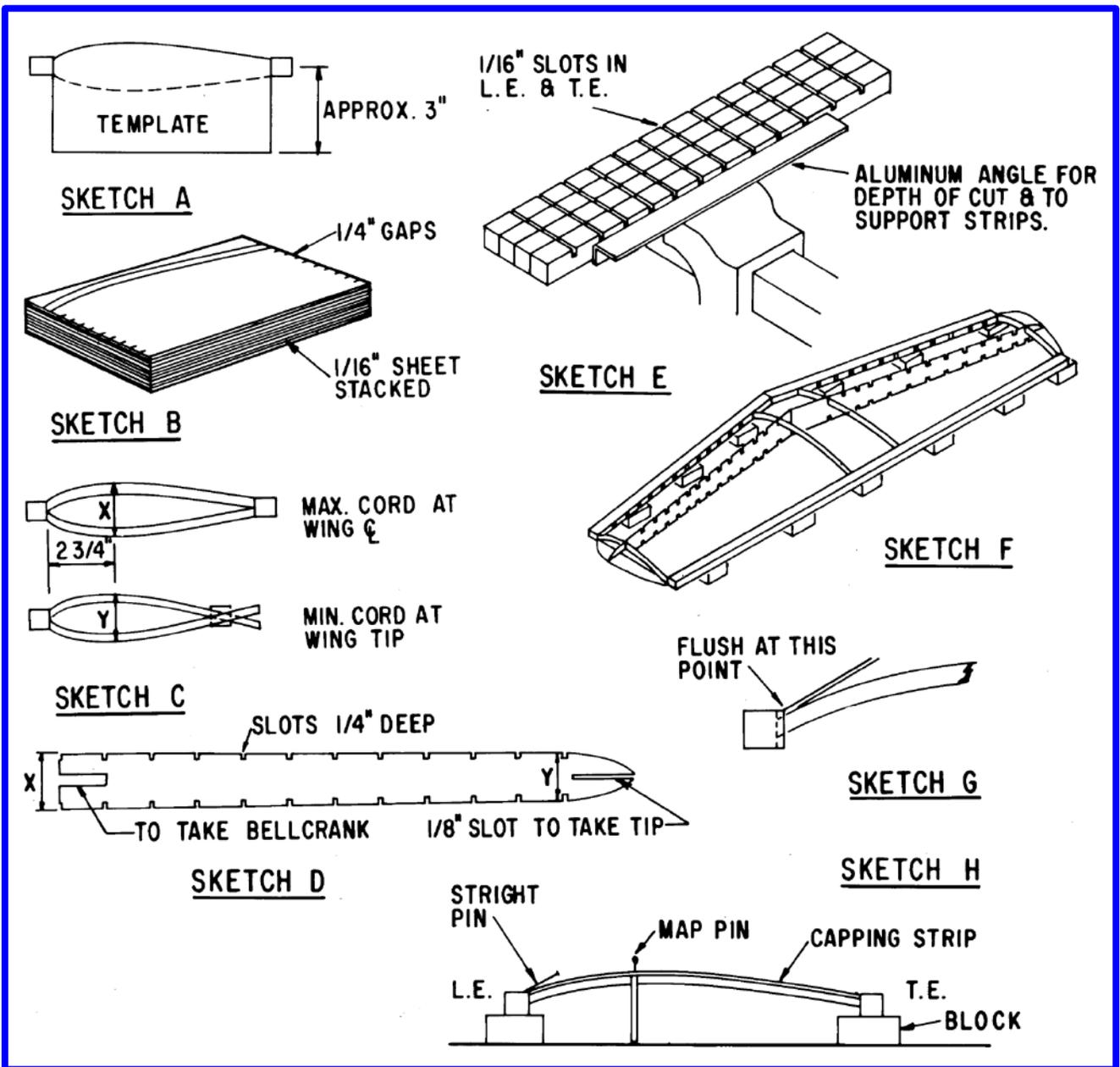
This will then give the depth of the main spar, measured between the two extremities of the ribs at 2-3/4 in. back from the leading edge. The main spar is then drawn up straight onto a piece of hard Vs" sheet as Sketch D.

Building can then start when board has been set as follows:

1) Draw outline on board and glue blocks along leading and trailing edge. These blocks should be half depth of main spar at CL of wing minus half thickness of leading edge.

2) The leading and trailing edge for both wings are then cut together, which means a block of four strips that all line up and can be cut accurately. (Sketch E.) To cut 1/16- in. slots in main spar, leading and trailing edges, I use two pieces of hacksaw blade with the teeth going in opposite directions.

3) We now have all the ingredients for a quick, fairly light, and rigid cheap wing which will be perfectly straight providing the building board is.



Pin the leading edge and trailing edge pieces onto the packing pieces having first glued the joints (I used PVA throughout). Next, put the main spar in position, having previously applied the 1/32 ply doublers, and hold in the vertical

position by putting in the two center ribs and the two tip ribs (top only). It should be found that the main spar will touch the building board in the center and should lift clear at the tip to bring the CL of the spar parallel with the board.

Pack this into position and glue tips into place between leading edge and trailing edge and into main spar. This will be sufficient to hold the wing perfectly straight while being built (Sketch F).

4) All the ribs are inserted into the slots on the leading edge and into the main spar. It will be found that an increasing amount of rib protrudes beyond the trailing edge. This is cut off in position with a razor saw and the rib pushed into the trailing edge.

Before glue is applied, take a piece of scrap 1/16" sheet and push leading edge and trailing edge of rib down to give a level with the sheeting. (Sketch G.) All joints can then be glued.

I water the PVA down slightly to allow it to soak in before drying as I only use a fillet of glue to aid speed in building. The ribs can be glued in one at a time but I have found that it makes very little difference in strength.

5) When all the ribs have dried the leading edge sheeting can be applied. I cut this from a 4-in. sheet and the remainder goes along the trailing edge. If working fairly swiftly the glue can be applied first to all the ribs then along the leading edge and sheet, then pinned in position.

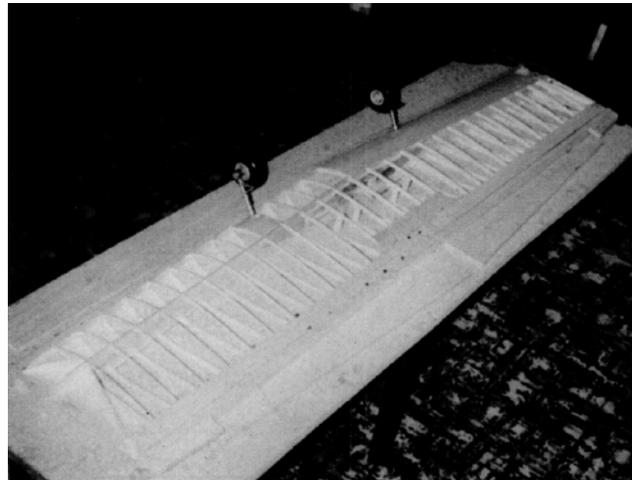
Due to the lip caused by lowering the ribs, I find it only necessary to pin at each rib but not through it. (Sketch H.) Run the glue along the main spar and work sheeting onto ribs, pin to main spar. Here, I use large-head map pins so that the sheet doesn't raise up the pin.

Repeat process on other wing and at trailing edge, then add center section sheeting, capping strips and tip ribs. The tip ribs have capping strips

as have the tips; this gives a definite flatness to each rib and reduces distortion of the tissue between ribs. Top of wing is now complete and should be left 24 hours before removing from board.

So far, time taken from cutting out template is in the region of three hours actual work which is normally spread over a few evenings. Do not trim leading edge or trailing edge as the wing has to be turned over and mounted on the same blocks.

6) The wing is then removed and turned through 180° about the CL and repinned to the jig. The bellcrank is added to the point which also forms the main center section brace and this is epoxied to the rear of the main spar. The leadouts are connected to the bellcrank and the guides fixed to the tip.



The undercarriage is bent to shape from 10-swg piano wire. Swg means standard wire gauge — equivalent is .128. Should the model be required for use over grass it is suggested that it be at least an inch longer and wired (soft copper) to the ply brace.

This is positioned at an angle from the bottom edge of the main spar to the uppermost edge of the leading edge. The area between the ply and the sheeting is filled with soft scrap balsa. I fill this area then sand it to the line of the two adjoining ribs so the bottom leading edge sheeting adheres to the whole surface.

The same process from No. 4 is repeated and, after 4-6 evenings' work, a completed wing is ready for sanding to shape. This is the process for building any Detroit-style wing including "Chipmonk

9." Building the rest of the Chipmonk is fairly straightforward, the only complications being the removable wing.

The fuselage is built upside down on the plan as this is the best method of obtaining symmetry. Having cut out the formers, remembering No. 5 is 1/32 ply on both sides of 1/8" soft balsa and the fuselage sides (again including 1/32 ply doublers), the bearers are placed in position on the plan.

Formers 3 and 4 are epoxied into place, making sure that they are both vertical and square. The fuselage sides are then epoxied onto the bearers and formers, making sure that the top of the sides are flat onto the building board.

Allow this to set while cutting four longerons from 1/4 stock. These can be glued in place using PVA or similar. The tailpost is glued into position by pulling sides to meet it.

At this point making sure that the sides align with the plan, add former No. 2, again making sure it is square. The two wing seat braces are now glued into position together with the tank bay base (the thickness of this will vary according to the height of the venturi on the motor but 1/4 in. for Fox 40 shown).

The vertical braces between the longerons are added before adding the front and rear wing mounts. It should be pointed out that these are not drilled and tapped until much later, although the dural plates are epoxied prior to fitting.

The front fixing is then doweled using 1/8 in. hardwood. The wing seat sheeting is added to the braces followed by the bottom sheeting rear of the wing.

When all joints are completely set, the fuselage can be removed from the board and the engine bolt holes drilled. When aligning engine, I put in just enough offset to make sure there is no inset, in other words the engine should be as near straight as possible.

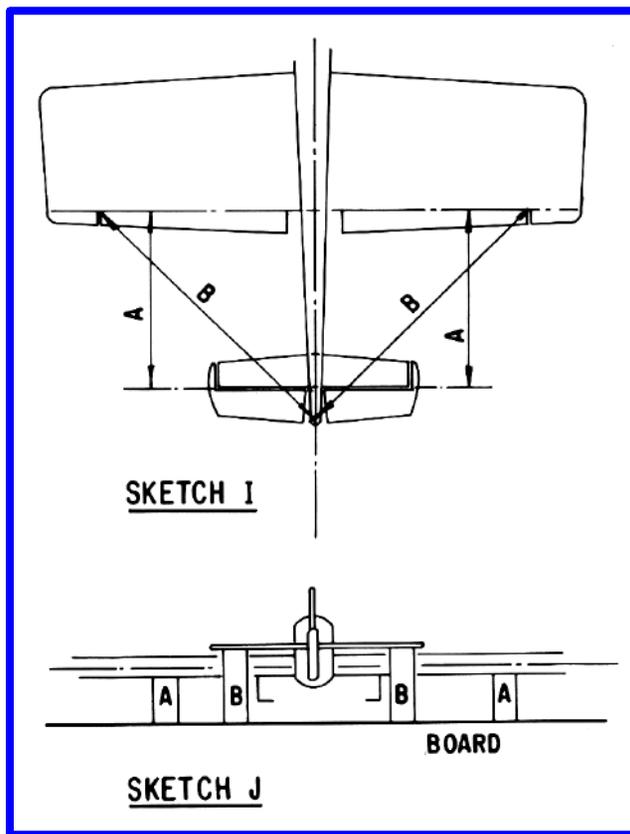
Bolt the engine in position in order to align former No. 1, but remove before adding top block. This is only spot glued into position while the external shape is obtained. Remove top block and hollow out as much as can be easily removed without endangering the strength (3/16 thickness is quite thin enough).

With the engine in position (with all openings sealed) block out cowling shape with scrap 1/2" sheet and sand to shape. When satisfied with the shape, cut cowling through exhaust stack centerline as side elevation, remove and sand internal to shape including air inlet and outlet (to dotted lines).

Bend 14-swg (.080) tail wheel strut to shape and bind to ply plate, epoxy into bottom of fuselage and block out with scrap.

When the wing and fuselage are completed the fuselage is turned upside down and the wing placed in its recess. The CL of the wing and fuselage are lined up and a measurement taken from the flap end to the CL of the fuselage at the back.

This measurement has to be the same both sides (Sketch I) and then four spots of balsa cement are used to hold the wing in position while the removable section is added.



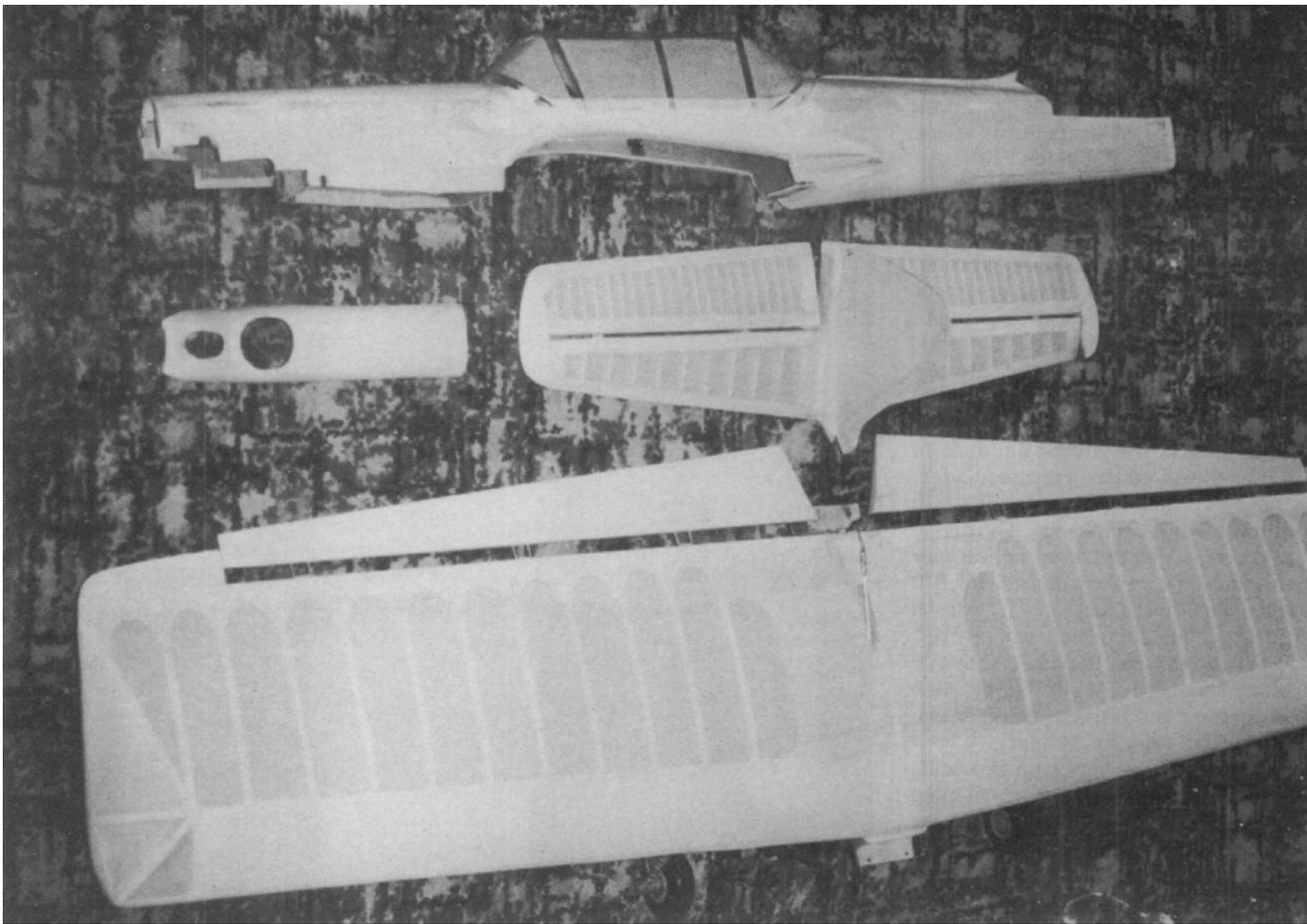
Once the glue has dried, hold the ply plates in position and drill through, tap out dural to required thread (I usually use 6B4), and bolt together. It is then just a simple operation of packing out with scrap block and sheeting to obtain required profile.

To line up the tail, have the CL of the fuselage and the CL of the tail in line and measure from hinge line to hinge line to obtain symmetry. Check the horizontal alignment at all times by laying model on flat board and putting two equal-depth blocks under the wings at approx 6 in. from fuselage and on main spar line. Then place two similar blocks (but deeper by parallel depth) under the tailplane. This ensures a true tail and wing horizontally (Sketch J).

With pushrod soldered into elevator horn only, shape of slot in former No. 5 allows removal of wing but will not let pushrod come out. Epoxy tail into place, again checking alignment. When absolutely sure that all items are square, glue top block into position and epoxy fin making sure that this is vertical and in line with CL of fuselage.

When the model is complete and to your satisfaction, add tip weight. There are no hard and fast rules about tip weight, especially with a symmetrical model. I personally balance the model 1/4 in. outside the offside fuselage side and have found that this seems to be the best position for any weather conditions.

Now to finish the model: this may seem a bit old hat but in England we have only recently started to obtain fuel-proof dopes (in the Provinces anyway) and as 6 ozs. on a 700 sq. in. model seems difficult to obtain with polyurethanes or epoxy paints, I'll stick to this method.



Once the model construction is finished, weigh both pieces, e.g. wings and body, then rub entire model with 320 paper dry until absolutely smooth all over.

If there are any dents, digs, etc. then fill them now with a mixture of balsa dust (rubbed off rest of model) and dope. Weigh again and see the difference. It may be only an ounce but it is worth removing.

Once model has the required finish add two coats of clear dope unthinned to entire model, except for capping strips; if added to capping strips they will tend to curl up and cause a distortion in the tissue (I've done it!).

Weigh the parts again and you will be surprised how little weight has been added. Sand entire model with 320 wet and dry — still dry, and when all roughness has been removed (and any new dents filled), check the weight again. There should be little difference to before doping.

Mix 30% dope, 70% thinners, and brush on clear lightweight tissue over entire body and tail with this mixture. (When covering, make sure that where the tissue goes over a fillet or round an inside corner, e.g. tail to body, to join the tissue in the middle of the fillet in the form of a butt joint.

Do not overlap because the shrinking effect of the dope will lift the tissue away from the fillet.) The thinners will attack the dope in the wood and will make a very good adhesion; when dry, add another coat of 30/70 and allow to dry completely.

The tissue will take on a slightly furry appearance and this must be rubbed down with 320 (use the same piece because it will be slightly finer) until completely dull all over, but do not rub through the tissue at this or any other stage. Mix a 40% dope, 60% thinner mixture and brush on another two coats and leave to dry for 24 hours.

Having coated the wings with two coats of unthinned clear dope (not capping strips) and rubbed down to original weight again, use a mixture of 30/70 to apply the heavyweight clear tissue over entire wing (except bottom of body—use lightweight).

Once dry, give another coat of 30/70 to tissue over wood but still not capping strips. This method is far more satisfactory than tissue paste—it is quicker, cheaper, cleaner and lighter! This will dry very quickly and the tissue can be water shrunk almost immediately.

When dry add two coats of 40/60 to open work of wings but not to the wooden parts. When dry, add two further coats of 40/60 to entire wing and leave to dry.

Back to fuselage, this is now ready to rub down with 400 paper dry and, when completely matte all over and you are sure there are no dents, etc., (the point of no return has been reached!) spray with a mixture of 30% silver and 70% thinner.

It covers all and is an excellent base for any color. Only a very thin coat will be necessary; it has very good covering qualities, so obliterates all manufacturer's stamps and wood grain coloring.

When this has completely dried, rub down with 400 dry but make sure not to cut right through the color at all, and the fuselage is ready for its finishing color. I use silver so I apply two more coats of 30% silver 70% thinner to the fuselage, and this is then ready for decoration.

The wings should now be completely dry and should be rubbed down with a piece of 600 dry, Evo-stuck (contact cement) to a piece of foam rubber; this follows the contours of the wing and will not cut into the tissue if careful.

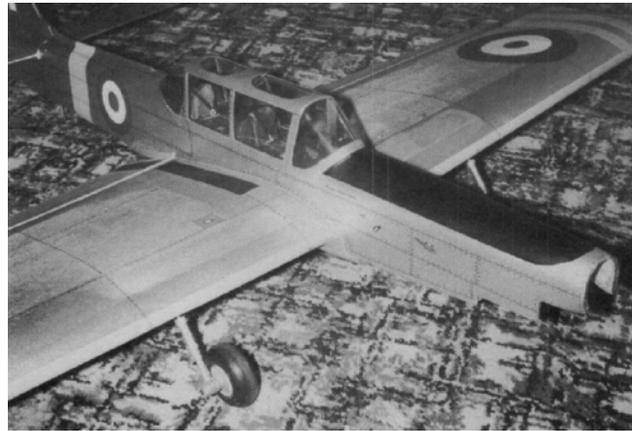
The wings are ready for the 30% silver-70% thinner treatment and when dry can be rubbed down again with the 600 dry, making sure not to cut the tissue on the ribs or sheeting edges.

This is now ready for finishing coat and again I apply two more coats of 30% silver dope and then leave entire model for at least three days before adding any decoration. A coat of 30/70 clear over the entire model would help stop the finishing color being damaged prior to adding decoration as any slight drips of dope or enamel can be wiped away without the base color being marked.

If silver is used as a finishing color then to achieve a good finish it must be sprayed on, and so must the fuel proofer because the dope is particles in suspension and a brush will leave ugly lines. The previous coat of 30% silver-70% thinner need not be sprayed as it has to be well rubbed down so the brush marks will go anyway.

When adding trim and using masking tape to achieve a clear line, it is advisable to run a thin seal of clear dope along the edge of the tape to prevent the color from running underneath.

Apply the trim color well thinned — whether sprayed or brushed it should flow out smoothly. As I said before, the last two items, finishing color and fuel proofer are the heaviest; be sparing because you should have had a very good base to apply them to so they only need to be thin.



This method of finishing should only add about 7 oz. maximum to a 57-in. stunt model, so with a heavy motor like a Fox 40, weights of 52 oz. are within easy striking distance.

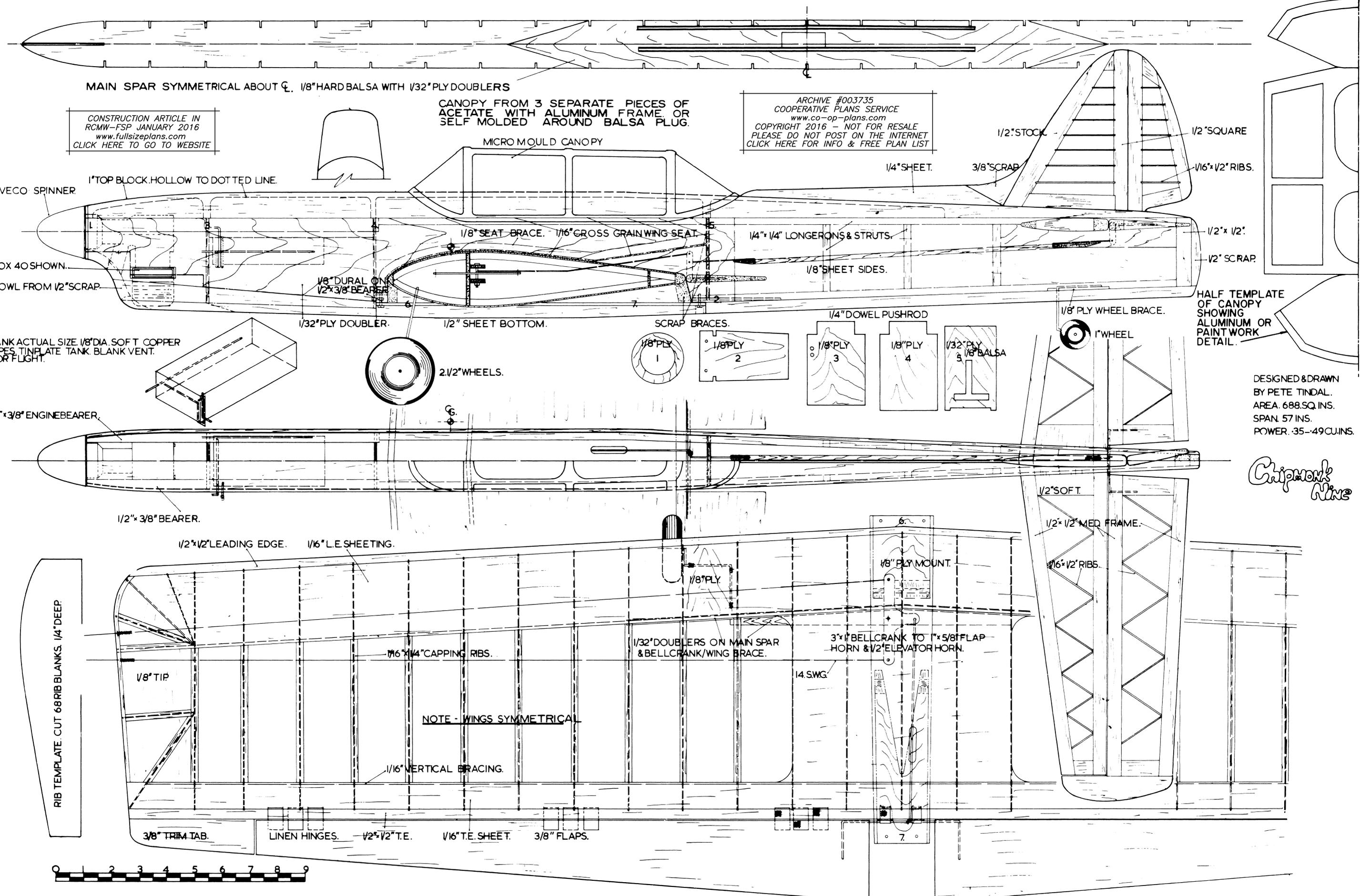
Once the model is completely finished it is well worth making cardboard covers for all flying surfaces; although they may not be damaged once on the flying field, transportation is usually the most injurious to good paintwork.

I will not dwell on the flying of this model, only to suggest that 18-1/2 meter Pylon stainless lines (equivalent in feet is 60.695) be used and that a flying speed of 5.2 seconds per lap suits me perfectly. I use a Top Flite 11/6 wood on a fast 4-stroke and trim the model to fly straight through the reverse wing over.

I would add that I hope this model gives as much satisfaction and success to any modeler who decides to build it as it has given me during the past three years, including a third, first and second place in the British Championships and a team place for the '76 World Championships.



Note - The cover picture of this issue of RCMW is from the cover of the April 1978 issue of Aeromodeller. It gives a nice color photo of the model.



HALF TEMPLATE OF CANOPY SHOWING ALUMINUM OR PAINT WORK DETAIL.

DESIGNED & DRAWN BY PETE TINDAL. AREA. 688 SQ. INS. SPAN. 57 INS. POWER. 35-49 CU. INS.

Cajonville

SPOOKS

by
Lynn East

Here's a cute little all balsa Free Flight model originally powered by the Cox .020 engine. Originally published in the September 1959 issue of Flying Models, we have re-drawn and rearranged the plans from what was originally presented.

The author is stated as Lynn East but the plans sport the late Ted Strader's name. The appearance has that Strader "look" so it was possibly one of those shared projects.

The design should make a rugged little fun flyer with electric power and maybe even RC with a motor and micro RC system salvaged from one of the small ARF machines that you may have sitting around.

The legions that fly for the fun of it still claim the largest rosters. Advent of the Cox Pee Wee .020 only made the membership swell.

Being a member of some standing in this "Having-A-Ball" club we offer another member of our "Fun-Fleet" for your enjoyment.

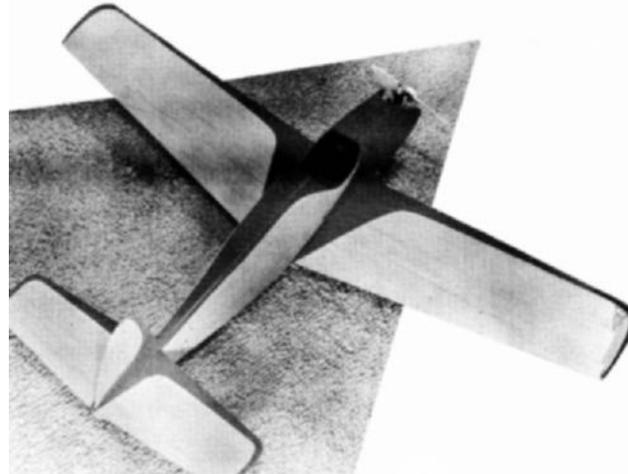
SPOOKS is a bit removed from the stick category, however, with a little care in arriving at all the parts it should go together with little difficulty and become a fast favorite in your fleet.

FUSELAGE

Cut two identical side patterns of 1/16" sheet balsa from the full-size outline. Only when outlining the rear area, from the cockpit back to the tail, do you use the top line and then the dashed line at the fin as your marking guide.

This allows for the bend of the fuselage sides to conform to the bulkhead outlines. Do not be unduly alarmed if the stabilizer appears to have a greater negative incidence after fuselage sides have been cemented into shape than that shown on the plans. This is supposed to be and was figured into the drawing.

Cement bulkheads 1, 2 and 3 to one fuselage side as it is pinned flat. For the time being, cement the bulkheads only on their straight area from the notch to the bottom of each. The bending of the fuselage sides will be done later. Now, cement the other fuselage side to this assembly.



The next step is to cement bulkheads 4 and 5 in place, cementing them in the same manner as the first three. Cement the fuselage sides together at the tail except that small portion from the stabilizer slot up.

Cement the forward and rear bottom 1/16" sheet in place, (grain crosswise) and when dry, sand to shape. Now, moisten the unbent portions of the fuselage sides with water and draw them into shape by wrapping rubber bands around the sides.

Do not try to pull the sides into line all at once. Apply a few bands and wait a moment. As the moisture begins to take effect upon the wood the bands will have more effect upon the bending procedure.

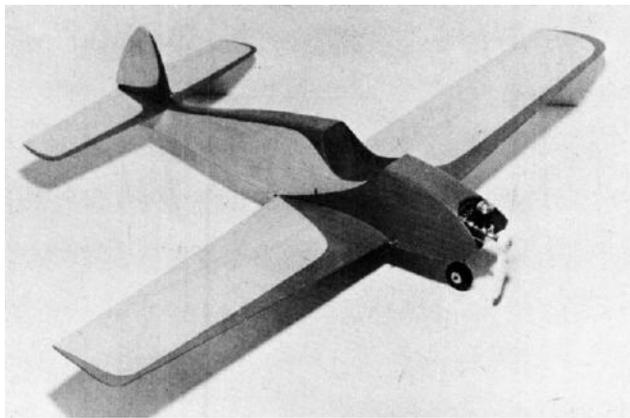
Do not attempt to cement the bending portions at this time. When the sides have become completely dry the bands may be removed, cement applied and the bands re-applied. When the cement has dried, remove the bands and cover the front top area with soft 3/32" sheet.

The fin and stabilizer are cemented together and installed as a unit. A bit of fitting and sanding may be needed here to get the desired results. The portion of the fuselage above the stabilizer which has not been cemented yet will be supple enough to allow the stab-fin unit to be inserted, checked and removed if reasonable care is used. Once the desired fit is achieved the stab-fin unit may be cemented in place.

Now the rear fuselage top covering may be installed. This completes the basic fuselage structure.

WING

Cut two identical wing patterns and splice them along the seam line if 3" stock is used. Cut out two pieces for the wing root bottom sections and cement the two No. 1 ribs and the No. 2 rib in their proper places.



Next cement these assemblies and the other ribs in place starting with the trailing edge portion of the ribs with the wing outlines upside down. When this much is dry, the wing outlines can be turned right side up and the rest of each rib cemented.

Block up each wing panel 1-3/4" at each tip and sand each root to effect a good dihedral joint. Reinforce this joint with gauze for extra strength.

Now, bend two rear landing gears, cement them in place and reinforce with gauze.

FINISH

Sand the entire structure to smoothness and apply two light coats of clear fuel-proof dope. Sand between coats with fine sandpaper. In finishing wings of this type, it is best to apply dope first to underside of each panel. This helps maintain the wing airfoil section.

Install the wing hold-down dowels in their proper places and then finish the doping process with another two coats of light clear fuel-proof dope. After this can come the color scheme of your choice.

All that remains is bending the front landing gear and mounting it in the 1/16" plywood engine spacer. Fasten the three 1" wheels in place and bolt down the engine.

FLYING

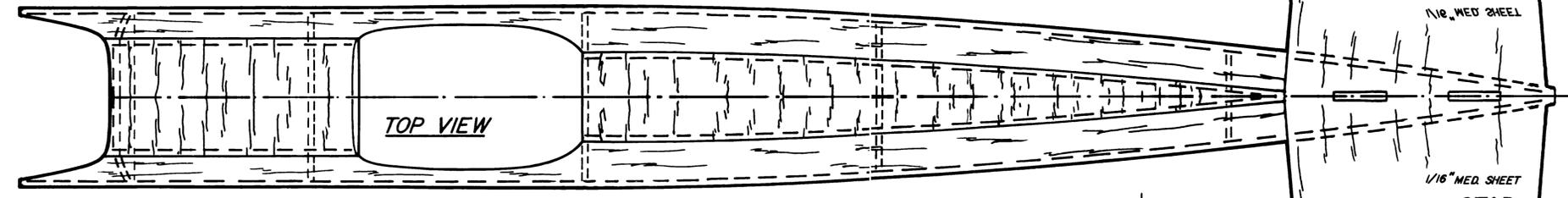
With the model balanced at the point indicated on plans, the time has come to try a few test glides over tall grass. When a good flat glide is achieved you are ready for a squirt of fuel. Good flying!!



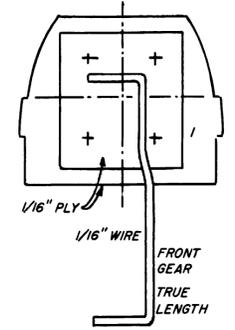
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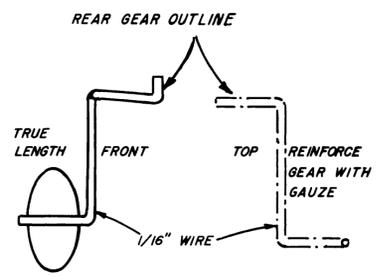
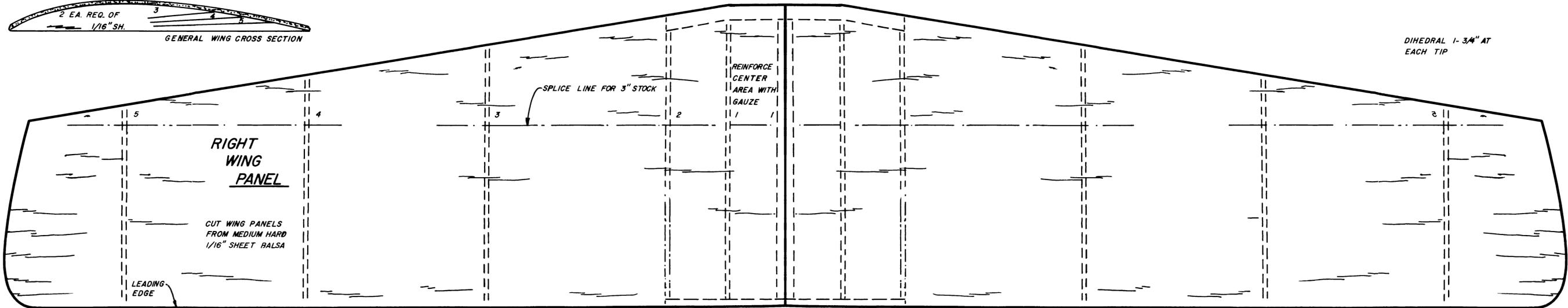
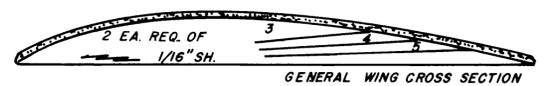
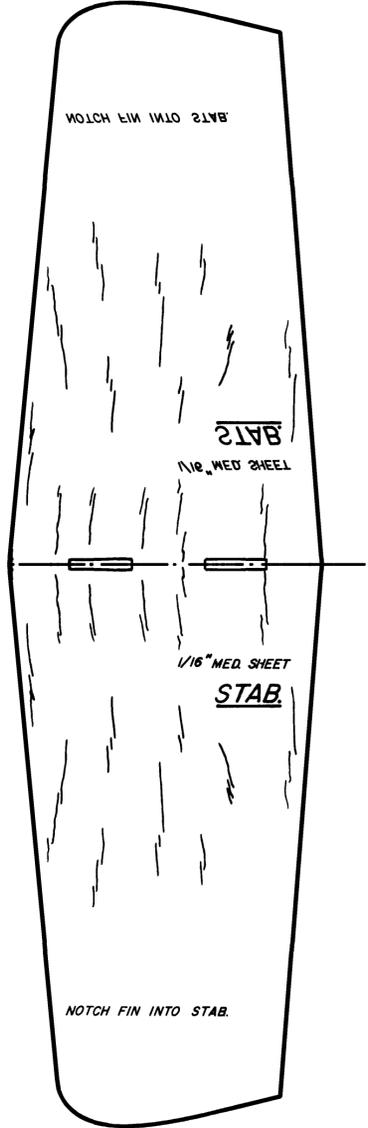
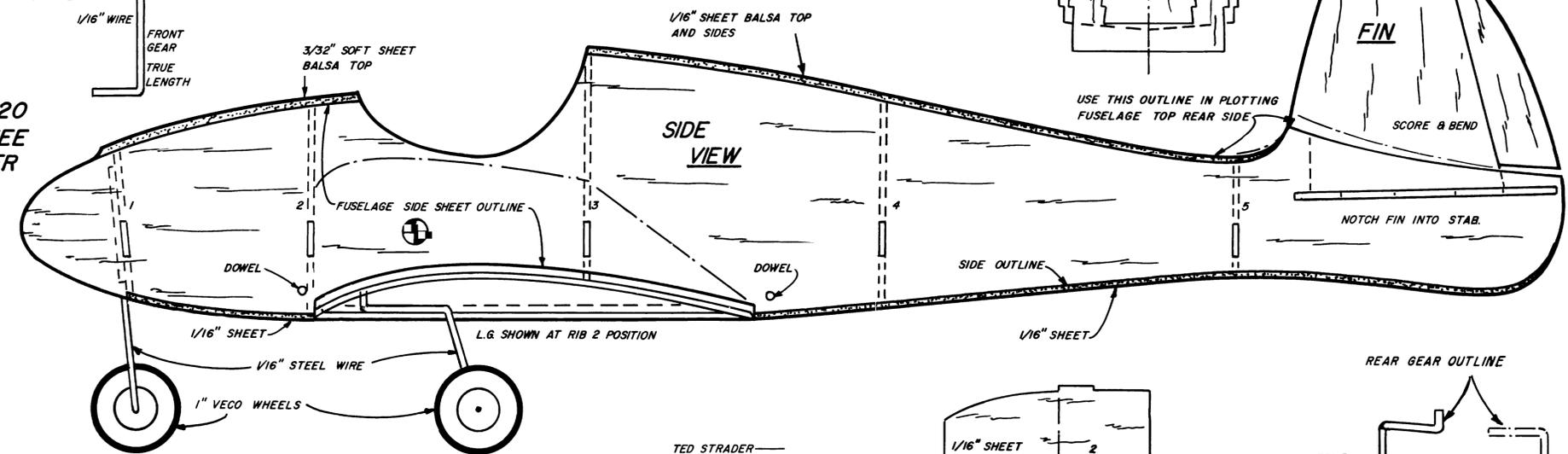
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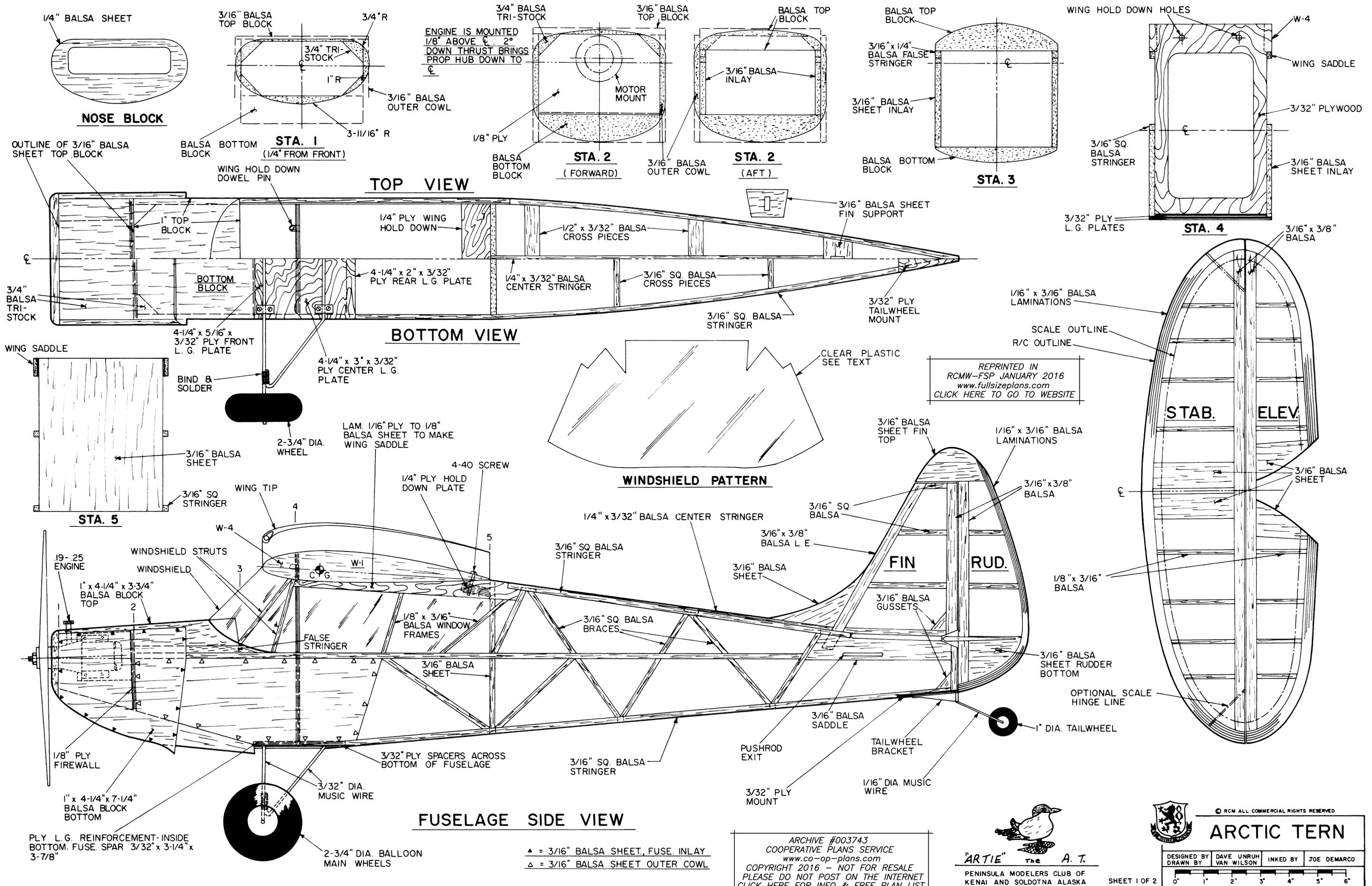


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PENINSULA MODELERS CLUB OF
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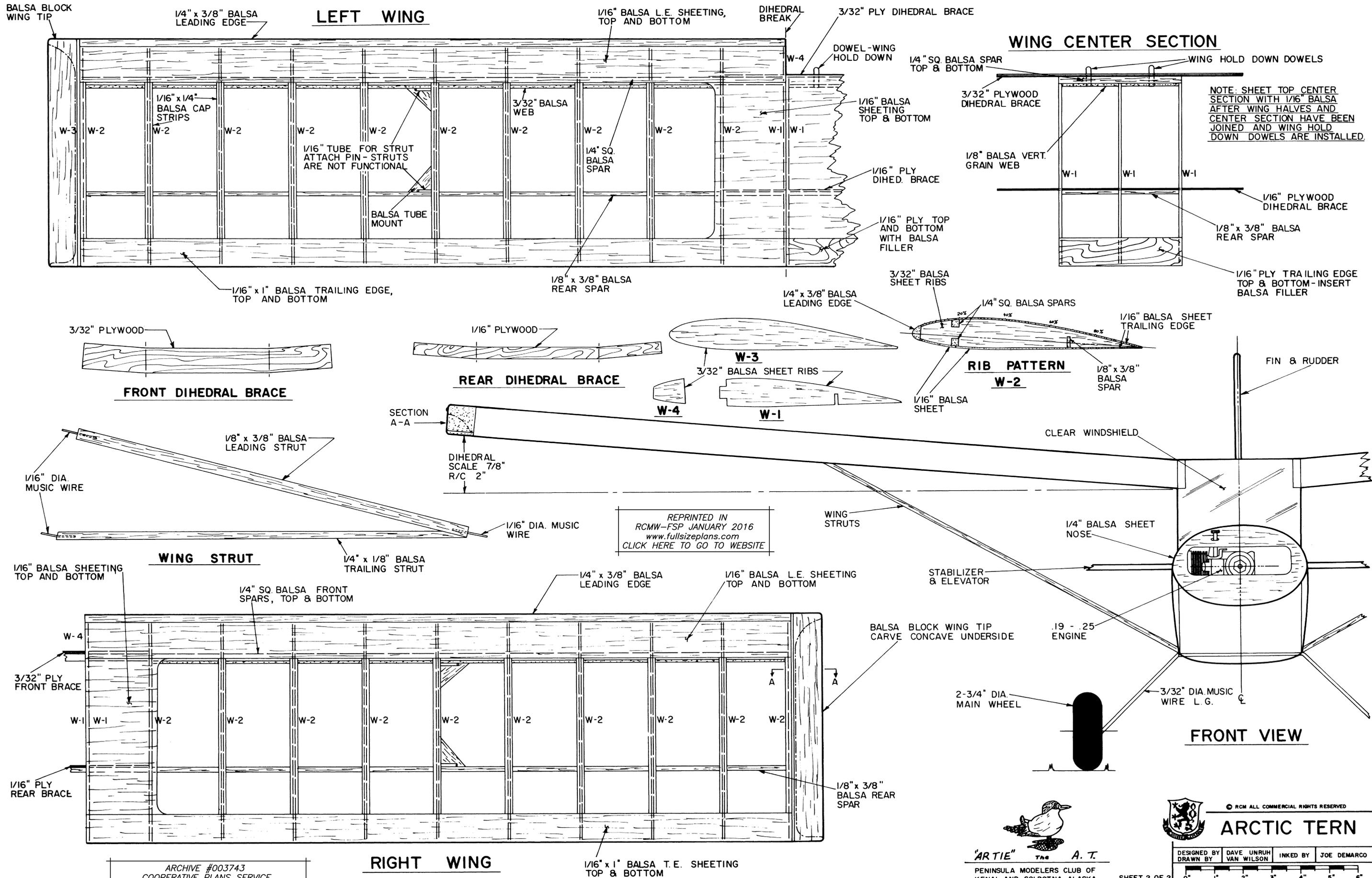
ARCTIC TERN

DESIGNED BY DAVE UNRUH INKED BY JOE DEMARCO
DRAWN BY VAN WILSON

SHEET 1 OF 2

PLAN NO. 1057

ORIGINALLY PUBLISHED IN DECEMBER 1989 ISSUE OF RC MODELER



NOTE: SHEET TOP CENTER SECTION WITH 1/16" Balsa AFTER WING HALVES AND CENTER SECTION HAVE BEEN JOINED AND WING HOLD DOWN DOWELS ARE INSTALLED.

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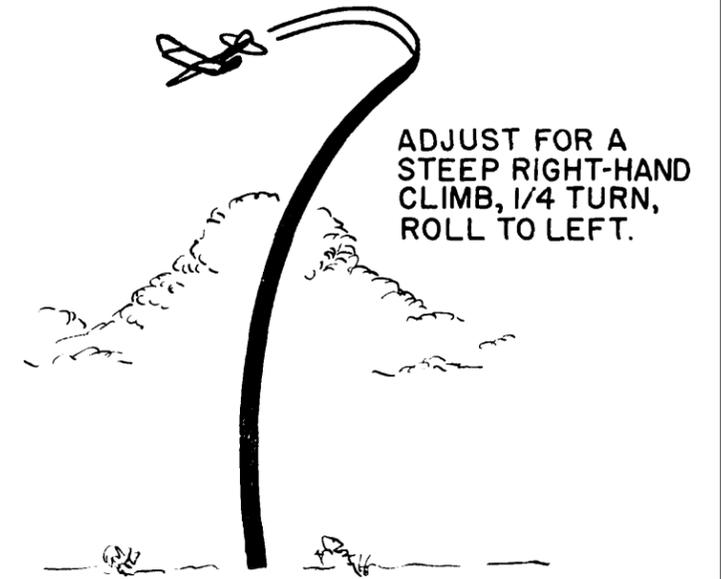
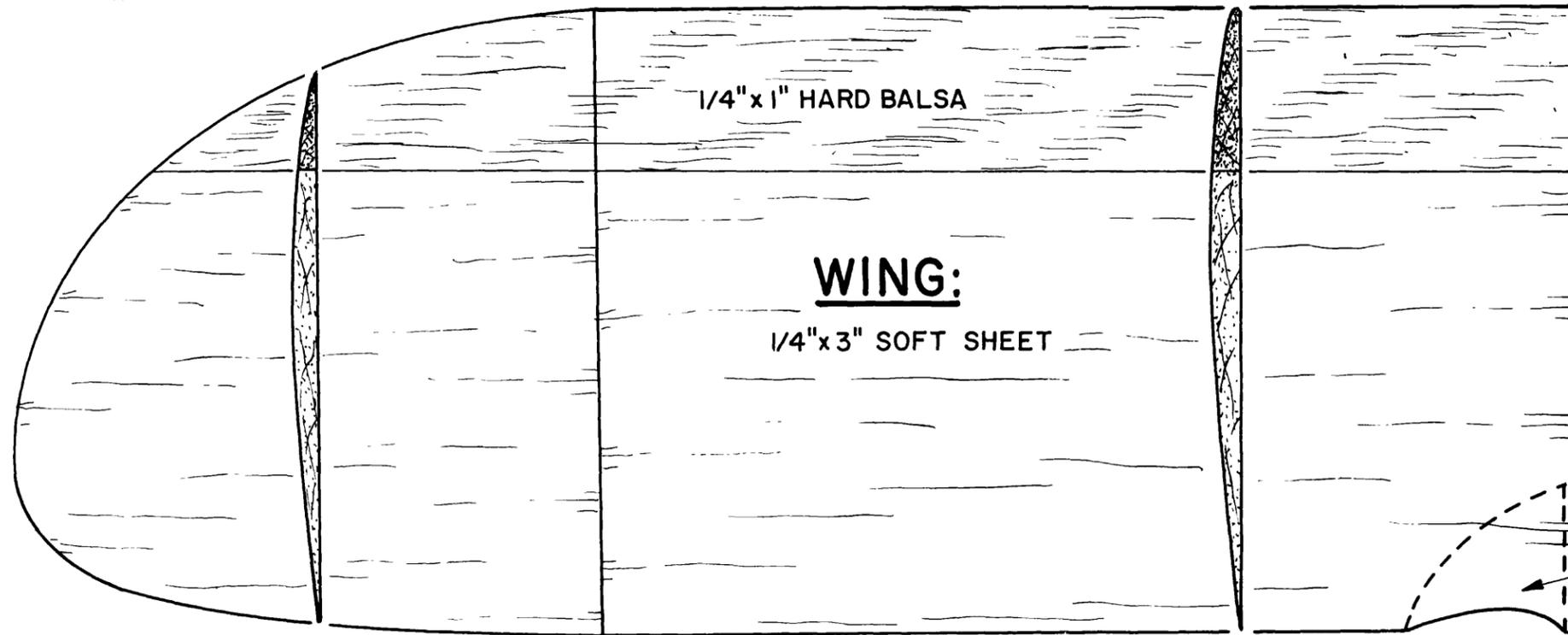
ARCTIC TERN

DESIGNED BY DAVE UNRUH
 DRAWN BY VAN WILSON

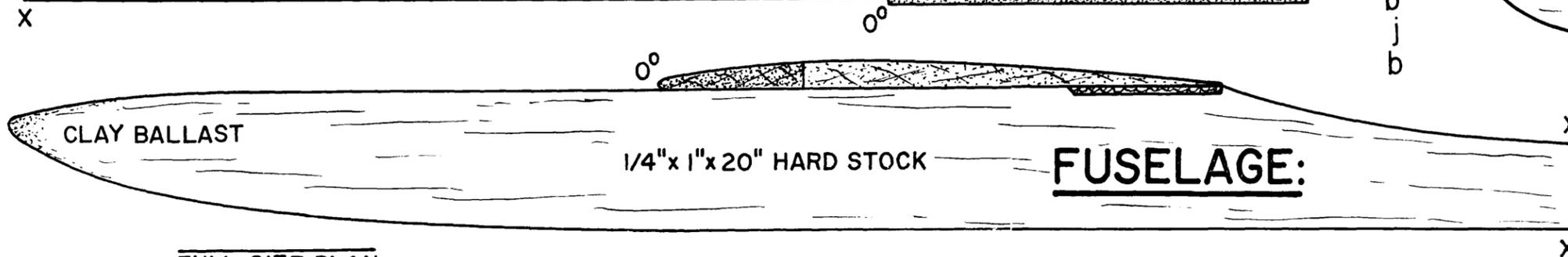
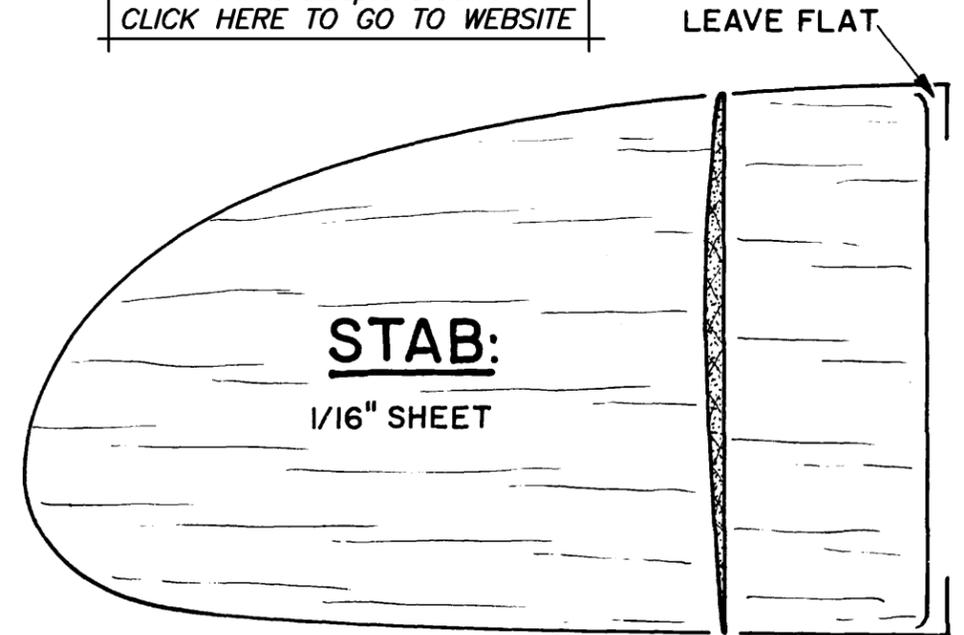
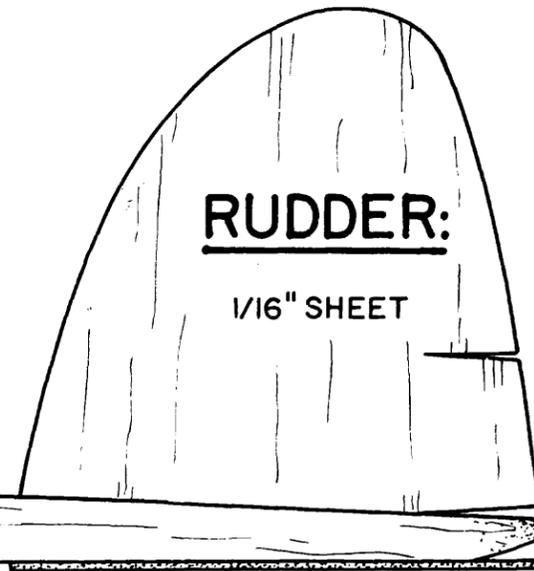
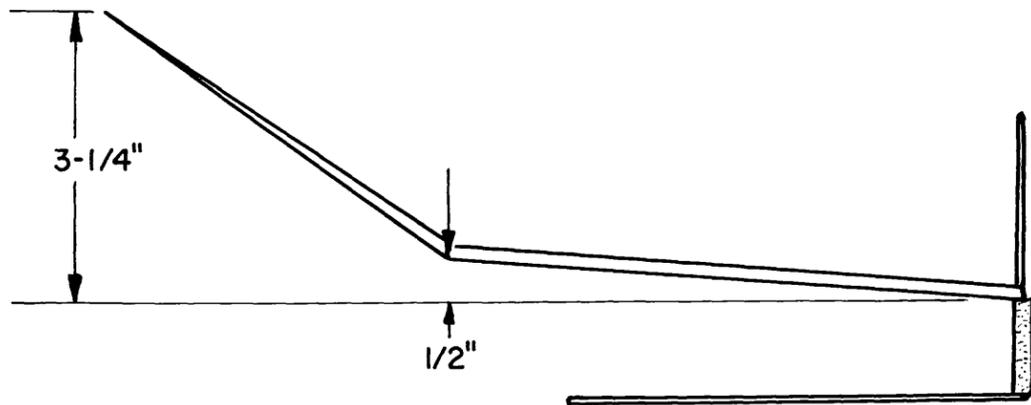
INKED BY JOE DEMARCO

SHEET 2 OF 2

PLAN NO. 1057



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FULL-SIZE PLAN

-ORBITER-

A FAST CLIMBING GLIDER FOR ALL-AROUND FLYING

FROM SEPTEMBER 1959 FLYING MODELS

QUADRUPLANE

by

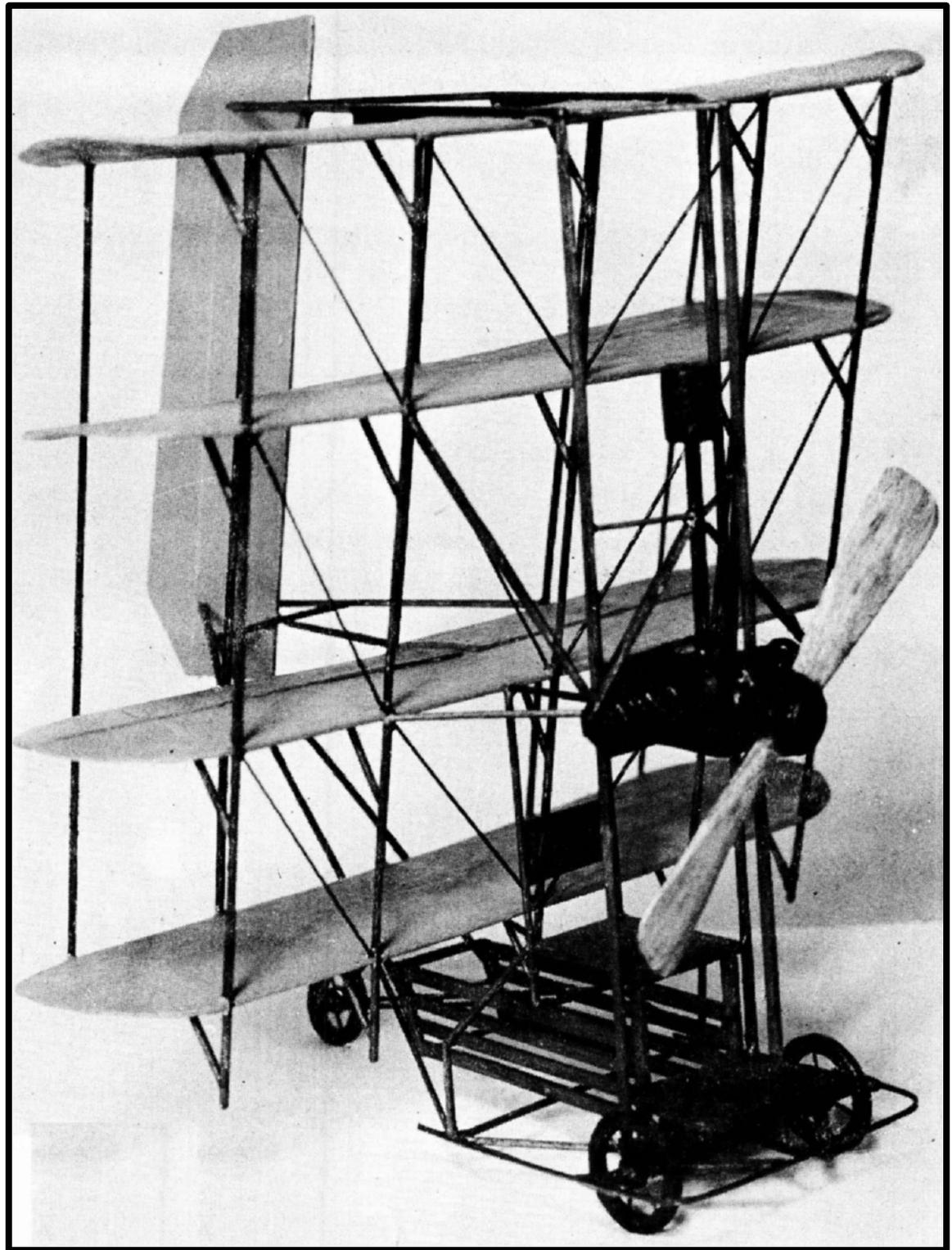
Normand Charlebois

Here's a challenge, a sorta-scale model of the Quadruplane build by Matthew Seller a long time ago and which is reported to have actually flown using a five horsepower engine. Very little else is known about the original aircraft but this free flight model is sure to draw comments wherever it appears. Designed by Normand Charlebois and published in the September 1959 issue of *Flying models*, the author says it's really not all that hard to build but will never win any endurance contests.

The benign air of old ladies, added to the charm of a lifetime spent in rearing a family is enough to soften the heart of the hardest man. This reasoning may also explain why old ancestral flying crates still attract modern modellers drowned by the sound of ultrasonic jets flying overhead.

Whether the term "benign" applies to Matthew Seller's nearly unknown creation of 190? has been lost in the fog of the dawn of aviation. From the sheer looks of this package of bailing wire, spruce struts, and canvas, the modern pilot would certainly think twice before trusting his carcass in this quadru-plane!

However complex and brutally incongruous the layout of this monstrosity is, its unusualness was enough to tempt this modeller into attempting a scale glider model of it: that was in 1942. Now, nearly 17 years later, it crept back from the past, like a nightmare, and although there was very little info available, the author attempted to make a flying model of it.



One of the sorest points to the pride of the dedicated modeller occurs when all the work and endeavor put into the balsa framework (the painstakingly built innards of the model) are going to be concealed forever, (oh! yeah?) under a sheet of Silkspan and a few coats of dope. This model provides a remedy against this unfortunate occurrence in most models.

Here it is, a tailless, body-less, naked quadruplane. The layout was obtained from a one-inch square picture in a 27 year old magazine, underneath which was this caption: "Matthew Seller's FLEW with 5 h.p.!"

Obviously, from so meager a source, exact scale is impossible to achieve and some confused areas of the picture were obviously thought up. However, we have endeavoured, as much as was feasible under the circumstances, to stick to the "charm" and the flavor of the original, if not to actual scale design.

We would be extremely grateful to anyone for providing additional information on this strange craft from the past, in the event any record of it has survived the years. In the meantime, let us go on to the construction.

FIN AND RUDDER

Since this crate breaks all other rules of design, let us begin our model in an off-beat fashion. Match plate 1 and 2 at the splice line, cover with waxed paper, and let us build the fin first, directly on the board. Once this is dry, we proceed to the rudder.

No instruction required here. Everything is simple and straightforward. Just sand to a rounded edge all around. You will find it convenient, since there are so many struts and braces, to cover these items NOW. Use white Silkspan, with grain running lengthwise, applied wet; let it act as the hinge by covering alternate sides of fin and rudder with same piece. . . .

The maze of struts and wires, while at first glance scary, does not mean that the construction of this model is difficult. It is actually even simpler than more conventional models, and the only part requiring advance preparation is the bent bamboo guard No. 27.

So bravely, let us now tackle the wings. For these and the fin and rudder we recommend cement equal to "Testor's" Formula A. However for all other items, we found it was much safer to use Formula B, as the extra strength will be greatly needed.

Remember this: the four wings and the tail-pieces are the ONLY covered parts, and the only parts to gain strength in this fashion. All other parts must rely on their own fibers. This is the reason why pine and bamboo were used and are suggested, wherever tension or compression stresses are present.

To facilitate construction, letters were used to identify shaped, cut or carved pieces, and numbers were used for items requiring only cutting to length and sanding to an oval shape. This sanding is a pain, although unnecessary on a model of this size, but appearance gains a lot by it.

Cut 17 ribs A, one B, 2 E, and 4 each of ribs C and D. Cut also 8 wing tips (X) from 1/32" sheet. Wing numbers 1 and 3 are built first.

Lay down the front and rear edges, and shimming these with balsa slivers, add 5 ribs A to each plus the wing tips. Shim these with 1/32" stock at the middle, and add the center spar (cut in sections) fitting it between the ribs. Wing No. 4 is identical, except for the presence of two additional ribs A.

Now, make up 5 struts of pieces 1.0 and 11, laid down on plate 1 and allowed to dry before removal. Next, we need 5 struts marked 12. (No, we did not forget Wing No. 2.)

Now, pin down all five struts 10/11, at their proper spacing over Plate 2, with pieces No. 10 sticking up, and we can cement our three wings in place. But, let us cover them first!

Most modelers know how to cover undercambered wings. Although the prototype may or may not have had both surfaces covered, the author took the trouble to cover both. Wet Silkspan, grain running spanwise, is cemented all around the upper surface; cement is also applied to each rib and spar for the undersurface.

Pinned to a flat surface to dry, the wings are easily cemented to front struts. Mark the rear struts with a pencil to locate the trailing edges and cement them in turn. (Who said it was difficult?)

Wing No. 2 is made in three sections. This is definitely out of scale since in those days, lateral control was achieved by warping wings.

However, this being impossible with a rubber model, it was decided to add two flaps on this wing, directly in the slipstream which would give us both lateral and longitudinal control.

It succeeds, after a fashion, for we have omitted to say that performance is very much to scale, we think. (Nothing better can be said of it.)

Pin the forward edge on the work-board, shimming it slightly, and cement in center rib B. Cut two spars from 1/16" square balsa, lay them in front of a solid line of the spars for other wings, add 1/32" shims to line up with the center rib.

Now, add 4 ribs D, and wing tips X spliced in line with spars. Flaps are made of two more center spars pinned directly over solid lines, plus two ribs C, one rib E, trailing edge and remnant of wing tip X. Actually very little work.

Cover the upper surface of this wing, letting Silkspan dangle at the rear; cement the under surface of the flaps to this same piece of Silkspan, letting it act as a hinge. Cover the forward under-surface and upper surface of flaps separately.

Cement this wing to the front struts and to the center rear strut 12. We now have the four other rear struts acting as tracks for our flaps, holding them in whatever position we desire!!! (Now, where were those difficulties?)

At this stage, we have one assembly comprising 4 wings and front and rear struts. Adding plastic reed leading edge bracing, (see plate 2 for true lengths), we are ready to add the rudder supports.

Cut 2 balsa fillers and cement them on top of wing No. 4; cut and bend bamboo pieces (2) from the plan view A-A, cement them to pine items 1 and 3; let this dry on the work board.

Repeat for the frame shown in section B-B, items 4, 5 and 6. When dry, cement this to wing No. 4 and to the rear vertical struts 12 and install the rudder.

Next step is the back-rest frame and seat. Cut 2 each of items No. 20, 21, 22, cement together as shown on Plate 2; when dry, remove from the board. Tie this with back-rest P and cement it to underside of the leading edge of wing No. 2. Use struts 23 to hold this at the proper angle to the wings.

Cut and assemble all pieces making up the seat proper, lay aside to dry. Cut foot-rest plate G, pine posts marked 7 and cement them in place. The "quad" is really taking shape now!

The motor block, gravity fuel tank and surrounding bracing are easy to make and require no instruction. It is all a matter of cutting pieces to shape, cementing in their individual places to the wing leading edges and posts 7. Note that the rear motor cone N is removable and must not be cemented at any time! Our rubber band motor will necessitate this, when we get to flying.

Cut and bend the propeller shaft, insert it from the inside of the motor block, add washers and a propeller, then bend back and cement the wire to hub.

The propeller itself is carved to shape from soft balsa, with two harder balsa plates cemented on both sides at the hub. Caution: driving the shaft through front post 7 is a delicate operation! It is recommended to pierce a small pin-hole first, and enlarge it gradually until a loose fit is obtained. Otherwise, a split post will result in spite of reinforcements J.

Now, the fuselage, if such a word can be used, for the orange-crate-like affair supporting the wheels!!! Make two sides from items 29, 30, 31, 32. Join them with cross-pieces 33 and 19. That is it!

We are now faced with the undercarriage. Commercial wooden wheels are O.K., but scale-wise, are a sin to use on such a ship. It is left to the individual to decide.

The author made his in this fashion: 6 hubs were cut from 1,46" pine, grooved for spokes and pierced for axles; then six outer rims were cut from 1/16" balsa, grooved on one side for spokes. Next, one hub was pinned to the board, one rim was pinned around it, and short lengths of plastic reed (snatched from a clothes brush) near side hub and rim were cemented on top and we had a wheel! Operation repeated three times, and we had a scale undercarriage of the period.

To install it, cement three posts below the foot-rest, bridge it with a split shaft-box, and then the front axle can be inserted.

As mentioned before, wheel-guard 27 is a length of bamboo soaked in hot water, pinned to the board and allowed to dry before cementing in place to miscellaneous struts and braces.

The rear wheel supporting frame is cemented in place and left to dry, hard and solid before the rear axle is inserted. Cement the ends profusely.

Matthew Seller's Quadruplane is now standing up once more, resurrected from the junk-pile!!!

The author's model was painted light green over the Silkspan, light maroon over all struts and braces, motor a shiny black, and the propeller a varnish imitation.

FLYING

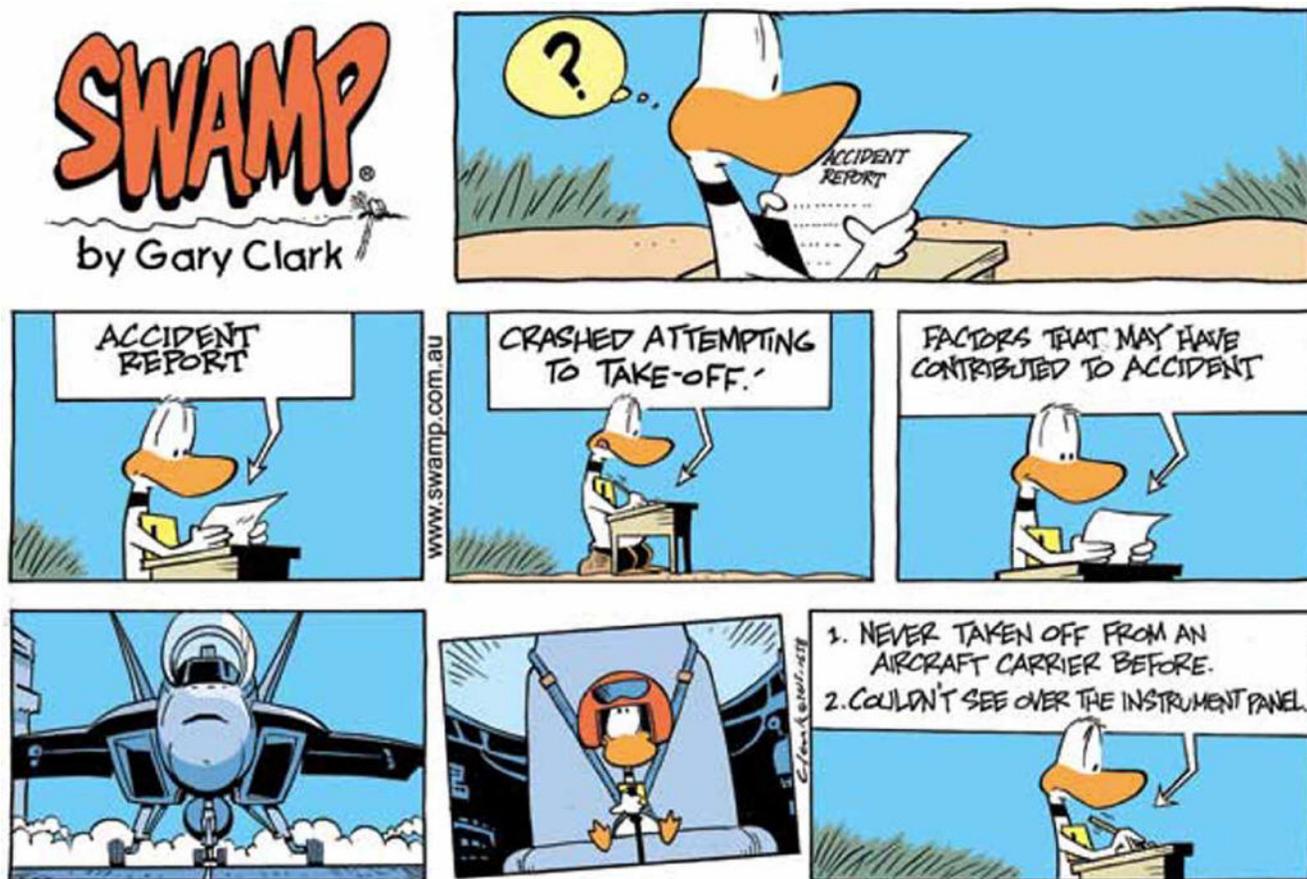
Of course, no one in his fondest dreams would consider high performance from such a scale model. No claim is made of it either. The best that was achieved is a twenty foot long hop, followed by a thumping landing.

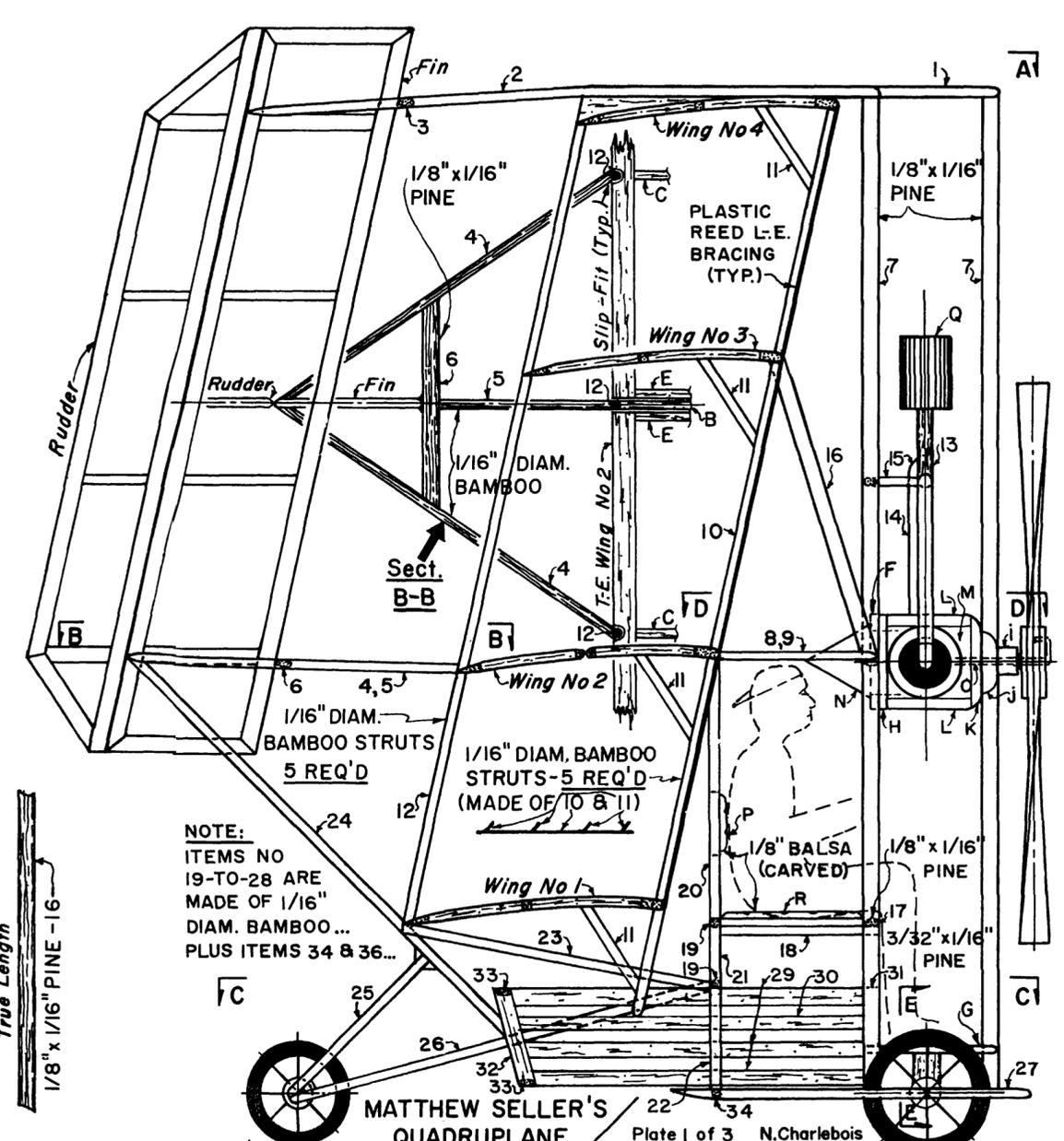
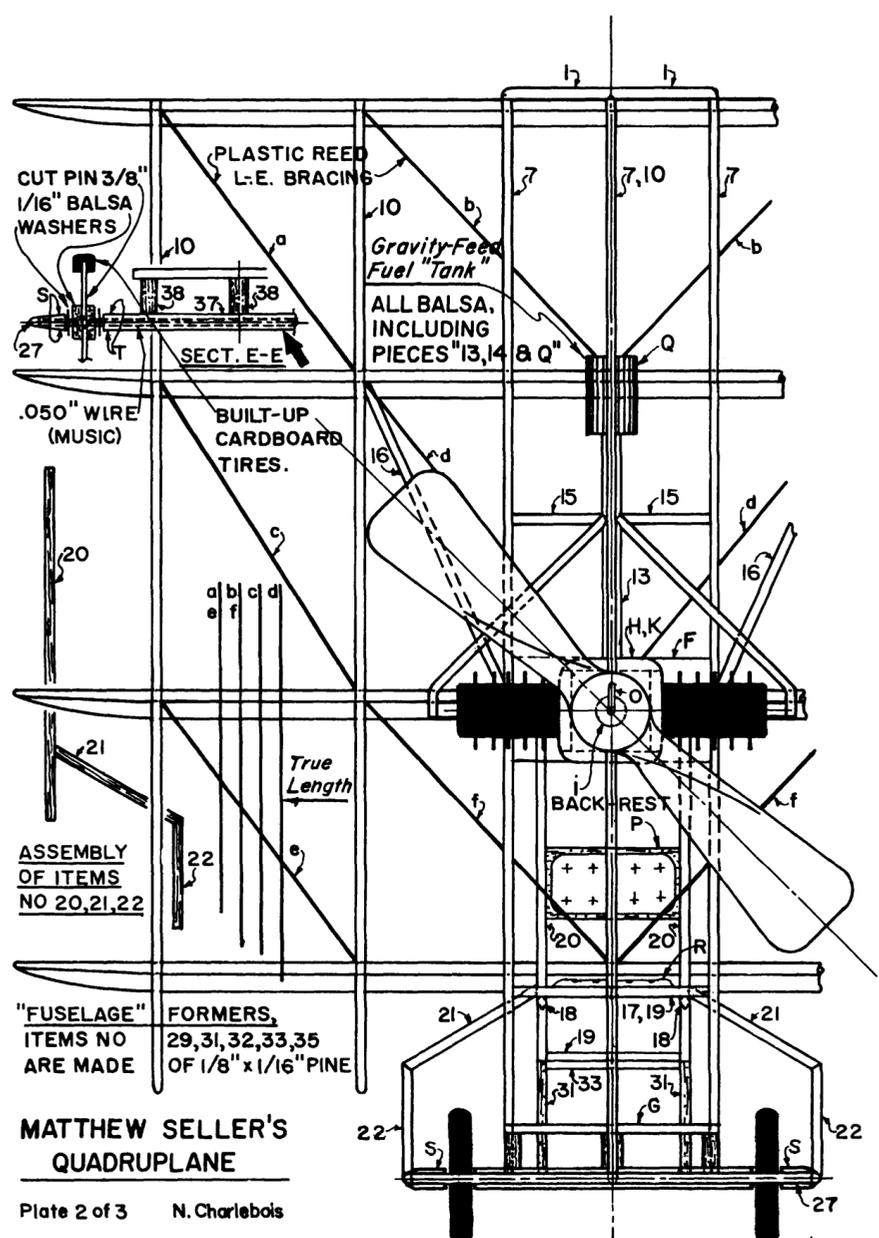
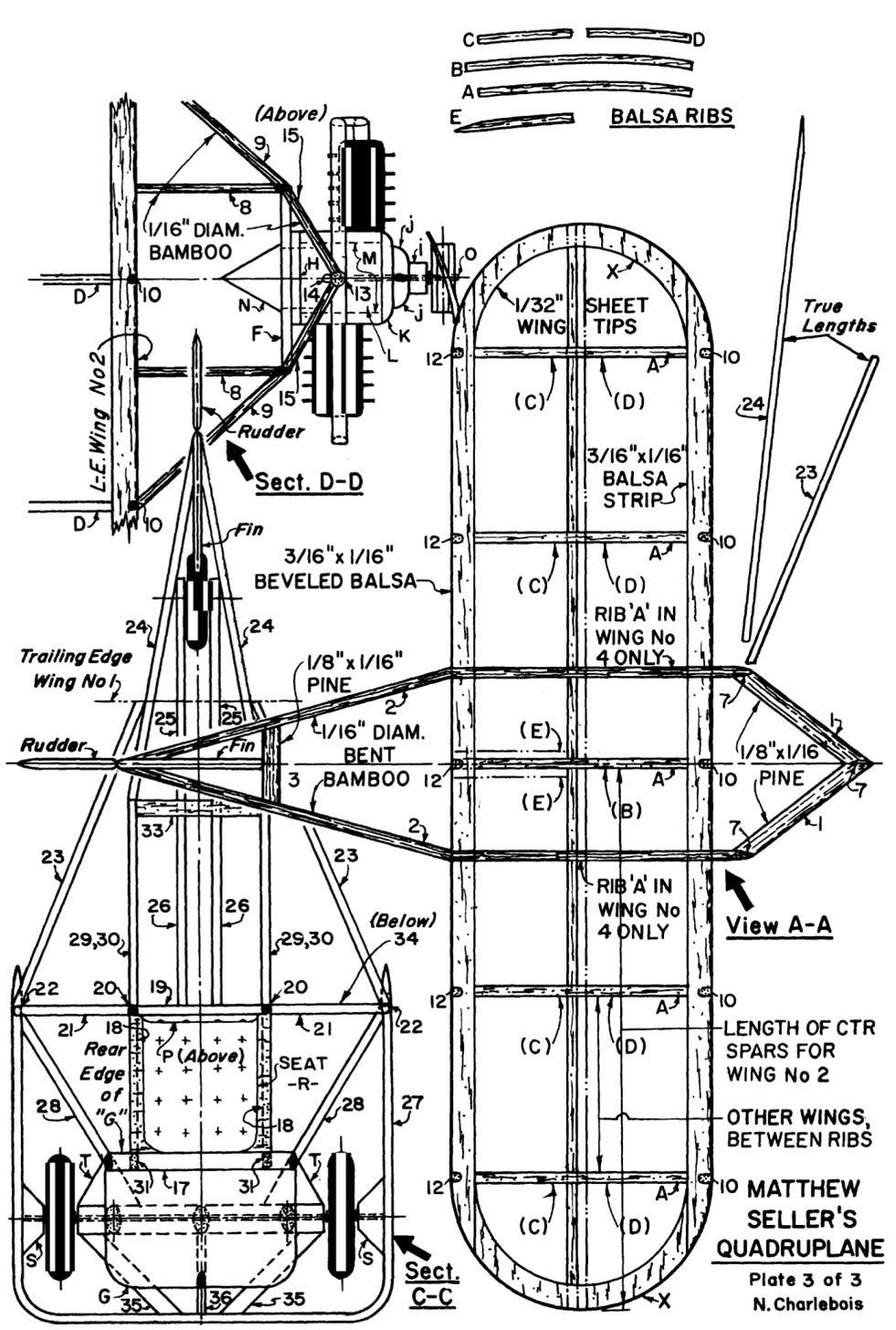
Having read the instructions and looked at the plans, you will notice also that no attempt was made at lightening the model, but rather, the sturdiest construction was aimed for. Because of this feature, the model has survived quite a number of these hops-and-thumps with no damage whatever.

Flying is achieved by cramming as many rubber strands as you can in an ordinary pea-shooter. Block the far end of one with a pine plug in which the rear rubber hook is inserted. Latch the other end of the rubber strands to the propeller shaft, allowing sufficient tension, at rest, to hold the pea-shooter tight against the motor firewall.

Adjustment is obtained by angling the pea-shooter either to the right or left of the front wing strut, lifting or lowering the flaps on wing No. 2 and turning the rudder. A blob of heavy clay stuck to the underside of pilot's seat serves to lower the CG.

Of course, a scale Matt Seller sitting in the breeze would be ideal. Any good sculptors in the house? Let us have photos of any attempts!!! Thanks.





ORIGINALLY PUBLISHED IN SEPTEMBER 1959 FLYING MODELS

CONSTRUCTION ARTICLE IN RCMW-FSP JANUARY 2016
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**Back Issue
MAGAZINE ARCHIVES**

By Roland Friestad

Last month we started a new feature on RCMW to allow subscribers to download complete digital back issues of selected model airplane magazines. The new feature was apparently successful because nearly 400 copies of the August 1982 issue of Model Builder were downloaded by subscribers. So here we go again.

This month we have a model magazine that is probably little known by the younger model builders, AIR WORLD. In the 1930's and 1940's there were several magazines published that had relatively short lives. Here is the May, 1947 issue.

Just go to the following link and click on the download button in the upper right corner of your browser screen. The issue will be downloaded as a PDF file and you can read or print out any or all of the pages as you choose.

[-- CLICK ON THIS LINK PLEASE --](#)

This download link will be expire on April 1, 2015, so if you'd like this issue for your own collection, better do it now.

Send me an e-mail is you like this new feature

Currently available digital collections of magazine back issues are listed on the next two pages. Prices are reasonable and include free postal delivery anywhere in the world.



Back Issues Model Airplane Magazines

If you're like me, you enjoy paging through model airplane magazines and plans, sometimes to find a project to build, to research a particular aircraft, or to just spend some pleasant time away from the daily grind.

If you like to build models, the magazines of today don't offer much since they are primarily expensive catalogs of ready- to-fly models. There's nothing wrong with RTF or ARF models but they don't offer much to interest model BUILDERS.

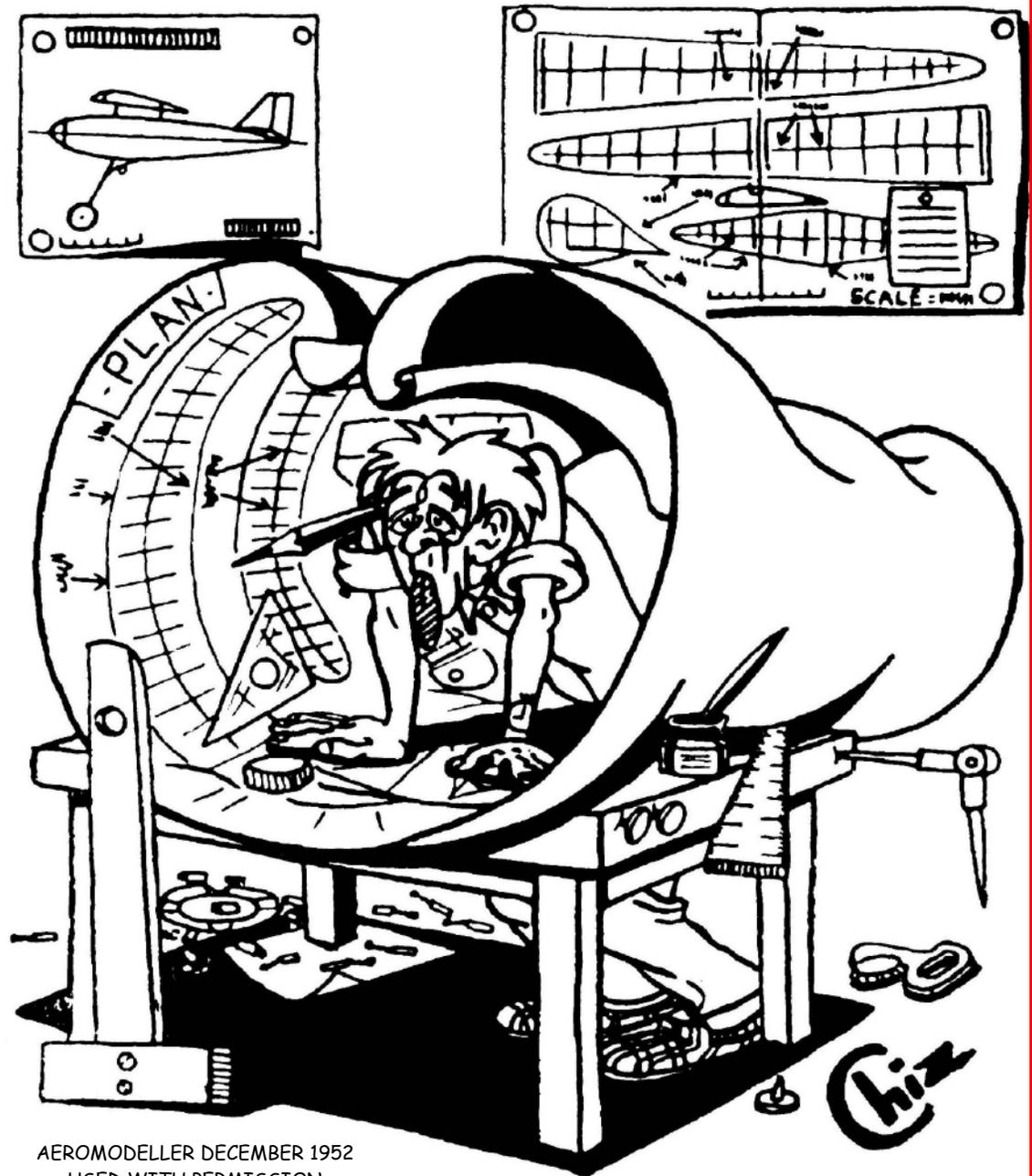
That's NOT the way it was in the past, when you had to build a model before you could fly it. If you're an old-timer, as I am, you have fond memories of Air Trails, Flying Models, Model Airplane News, Aeromodeller and many of the several other magazines available "way back when".

If you're a relative newcomer to modeling and want to learn how to build them, those old magazines can provide a wealth of useful information, plans and how-to-do-it articles.

There are several problems with those old magazines. They are sometimes hard to find, often in bad condition, and in many cases they are so fragile that they can fall apart just by turning the pages. This is because they were often printed on pulp paper, also known as newsprint. Newsprint is inexpensive, but has residual chemicals that cause it to deteriorate when exposed to the air and particularly to sunlight. Your wife or "significant other" might also ask "When are you going to get rid of all those smelly old magazines?"

I admit to being a bit of a "nut case" but have been collecting these magazine for over 50 years and now I am trying to digitize them to preserve them for other modelers. They are now available as digital PDF files. See the details on the next page.

Keep 'em Flying - Roland Friestad



AEROMODELLER DECEMBER 1952
USED WITH PERMISSION

We have switched to USB Flash Drive Cards Much More Reliable

NEW - Now available is a digital collection of the first 10 years of RC Modeler magazine, starting with the first issue published in October of 1963 through the issue of December 1972 - 109 issues in all on a single USB drive card. - **\$50 - Postage paid world wide**

AIR TRAILS - This magazine went under several names. The final issue was published in March of 1975. There are 435 monthly issues included in the complete set and priced as follows ---

D001010 - January 1937 through December 1943 - 84 issues - **\$50**

D001011 - January 1944 through December 1950 - 84 issues - **\$50**

D001012 - January 1951 through December 1961 - 132 issues - **\$50**

D001013 - January 1962 through December 1971 - 96 issues - **\$50**

D001014 - January 1972 through March 1975 - 39 issues - **\$25**

AIR TRAILS ANNUALS -

D001009 - 1938 through 1969 - All 25 issues - **\$30**

D001015 - SPECIAL - Complete set including the annuals - \$200

MODEL AIRPLANE NEWS - The first issue of this magazine was published in July of 1929 and it is still being published. We have the following collections currently available ---

D001002 - July 1929 through December 1942 - 161 issues - **\$50**

D001004 - January 1943 through December 1952 - 120 issues - **\$50**

MODEL BUILDER - This magazine ran from the first issue of September~October 1971 through the final issue dated October, 1996 -

D001001 - The complete run - 295 issues - **\$75**

FLYING MODELS - The first issue of this magazine to use the name was published in June of 1947 and it is still in publication. We have the following collections currently available ---

D000013 - June 1947 through December 1963 - 123 issues - **\$50**

RC MICRO FLIGHT & RC MICRO WORLD - The complete run of RC Micro Flight, 1999 through 2004 and all issues of RC Micro World, 2005 through 2012 are available - D001016 - **\$30**

AEROMODELLER is currently being digitized and the first collection will include the 1950's and 1960's (240 issues) which will be available in January 2016 -

The digitizing of several other magazines will follow including **MODEL CRAFTSMAN, FLYING ACES, POPULAR AVIATION, MODEL AIRCRAFT (British)** and others. This is a long term project. Many thousands of hours and dollars are represented in these collections.

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