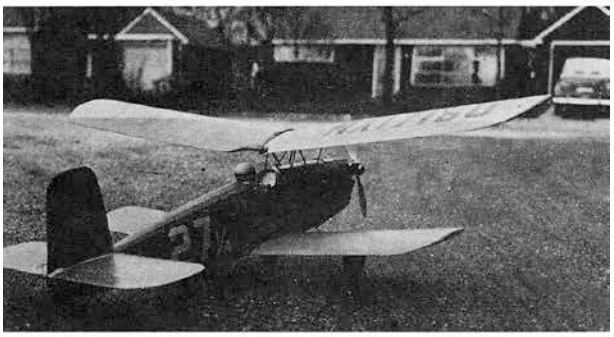
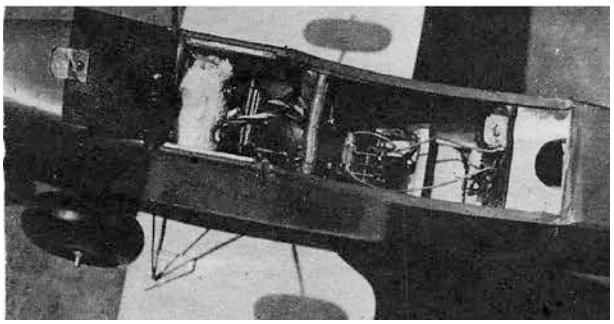
Wonderwings

"Big Jim" Patmore launches pylon version; Macnabb 27 in hand.



Wire birdcage wing mount job; Cal's abode & souped Studie, right.

Now, we ask you, have you seen a prettier radio plane? Not only does she' rate high in appearance, but she's a rugged beauty, too. The photo below is bottom of fuselage with lower wing removed.



Fast, maneuverable bipe for stunt work will bring you plenty of compliments and many hours of flying fun by S. Calhoun Smith.

Biplanes have long been the step child of free flight, and we haven't heard of any rash of them breaking out in R/C, either.

Here's an attempt to change all that! It was felt that the biplane configuration should be well suited to R/C flying for a number of reasons. The biplane has been a top notch stunt airplane in full scale aerobatics, so obviously the type would seem well suited to R/C stunting. The biplane packs a lot of wing area into a small space, making transporting easier. Biplane flight characteristics are well suited to R/C flying, notably stall recovery is much smoother than monoplane, and the extra drag slows speed a bit so that the model can be kept in close for maneuvering. A short coupled model such as this can turn on a dime, and has a snappy roll tendency.

It would seem that all these factors might add up to a pretty wild flying machine, but experience showed just the opposite. When properly adjusted repeat when properly adjusted, this ship left little to be desired in the rudder only flying department and is a veteran of months of Sunday afternoon flying sessions.

Wonderwings has taken its share of bumps and cartwheels too. Its structure was designed with a view to withstanding all the hard knocks test flights could give, so that something would be left for flying when adjustment and trimming were completed.

Liberal use of plywood and Weldwood glue is the answer for crash resistance and as a result this ship is rugged no foolin.

Making the biplane setup fly well is controlled by the wing tail incidence and proper C.G. location. Free flight maestro Frank Ehling showed us the proper set up for this ship, so if the redesign bug hits you read just one more sentence, please. Don't change the incidence angles of wings and tail from those shown on the plans!

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Wonderwings

Model specifications are span 44", length 34", total wing area 480 square inches, weight 46 oz., wing loading is 9.5 oz./100 sq. in., and power loading is 328 oz. cu. in. with the .14 engine. The ship has been flown with a throttle-down Arden .19 and results were frantic, to say the least. An .09 engine would not be quite enough power at present weight.

Plans differ from the original model a bit, but the changes are for your benefit and will not affect flying. The nose was lengthened 1/2" to move battery weight forward a bit for proper C.G. position, 1 1/2 oz. of lead was carried in nose originally. Wheels are bigger, 3" dia. instead of 2 1/2". Fuselage width increased from 3" to 3 1/2" to allow more payload room.

R/C flying has been done with home built RK61 two tube receiver on 27 1/4 mc. The sponge rubber receiver mount is standard practice and is fine for crash resistance. Batteries in forward compartment are packed tightly in sponge rubber to prevent their flying around in a crash. We prefer the separate relay mounting to subdivide weight of components and the Lord mount takes care of vibration problems. Both E.D. Mk III and Bonner escapements have been used, and rubber drive is popular torque rod linkage.

Construction follows accepted free flight practice with a few wrinkles thrown in here and there, so only the high spots will be treated here. Top wing is built over plans, pinning down leading edge, rear spar, and trailing edge. Then add ribs, front spar, leading edge covering and rib cap strips. Join with plywood spar joiners, block in center section and cover bottom with 1/32" plywood. Covering can be silk or Nylon. Silk was used on original. Plans show spar joiners with 7° dihedral angle for top wing. Lower wing has 4° dihedral, and on basis of much flying it is felt that top wing dihedral could be reduced to 4° with no ill effects. So, if you feel you can handle flatter dihedral use 4° in both wings. If you want to be real sure use 7° in top wing.

Complete building details are available on the full size plans.

Bill of Materials

2 1/16"x6"x36", stab, wing skins. 4 1/16" x3"x36", wing ribs, leading edge, fuselage bottom. 3 3/32"x3"x36", fuselage sides. 2 1/8"x3"x36", ribs and formers. 4 1/8"x1/8"x36", longerons. 2 1/8"x3/8"x36", spars. 2 1/8"x1/2"x 36", spars. 4 3/32"x1/4"x36", stringers. 2 1/2"x 1/2"x36", leading edge. 2 1/4"x3/4"x36", trailing edge. 1 1/8"x5/8"x36", trailing edge. 1 1/2"x 3/4"x36", leading edge. 1 3/16"x3"x12", fin and rudder. Scrap 1/2" and 1" block cowl and wing tips. 1 6"x12"—1/8" plywood, form-