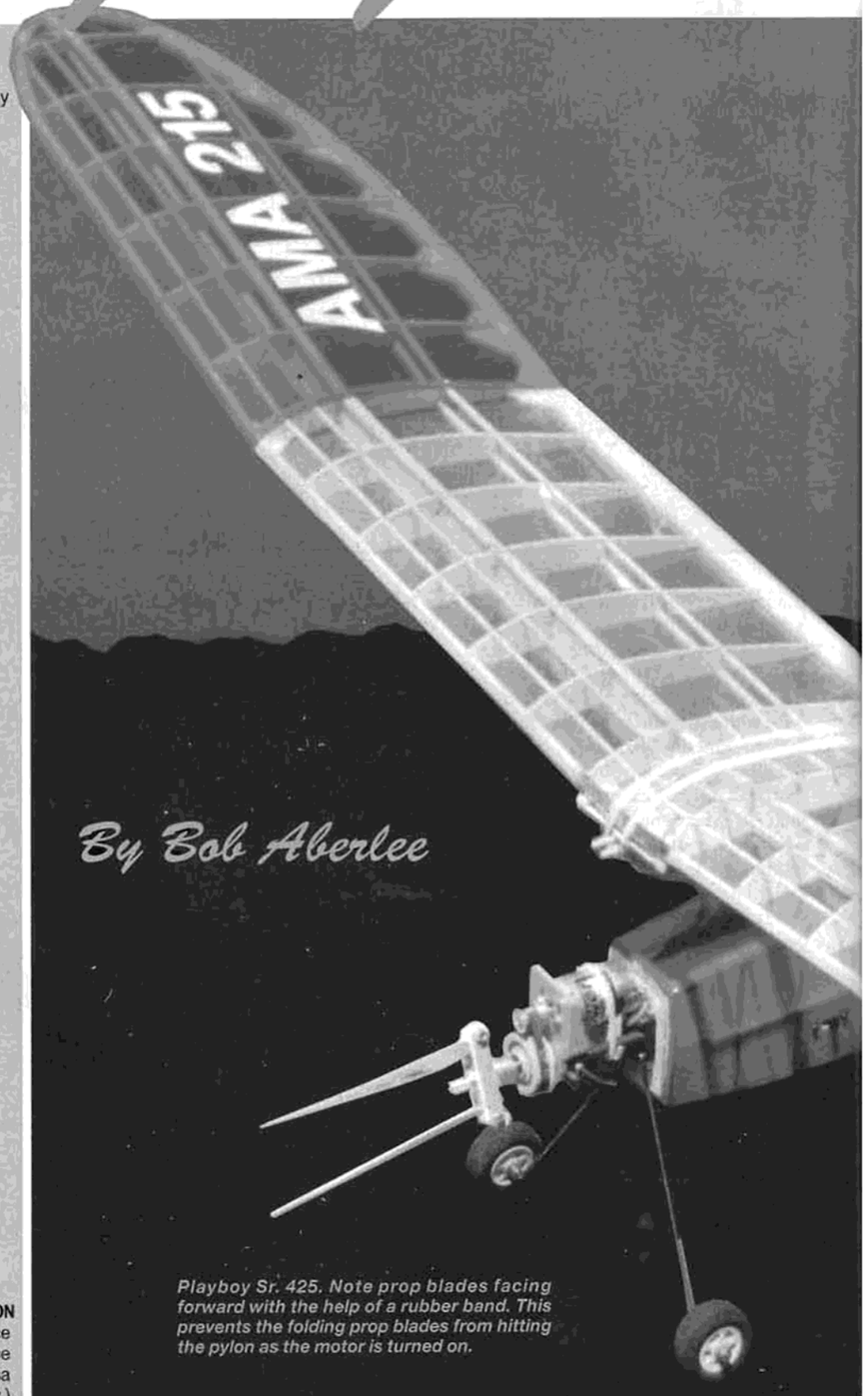
Playboy Sr. 425 Electric

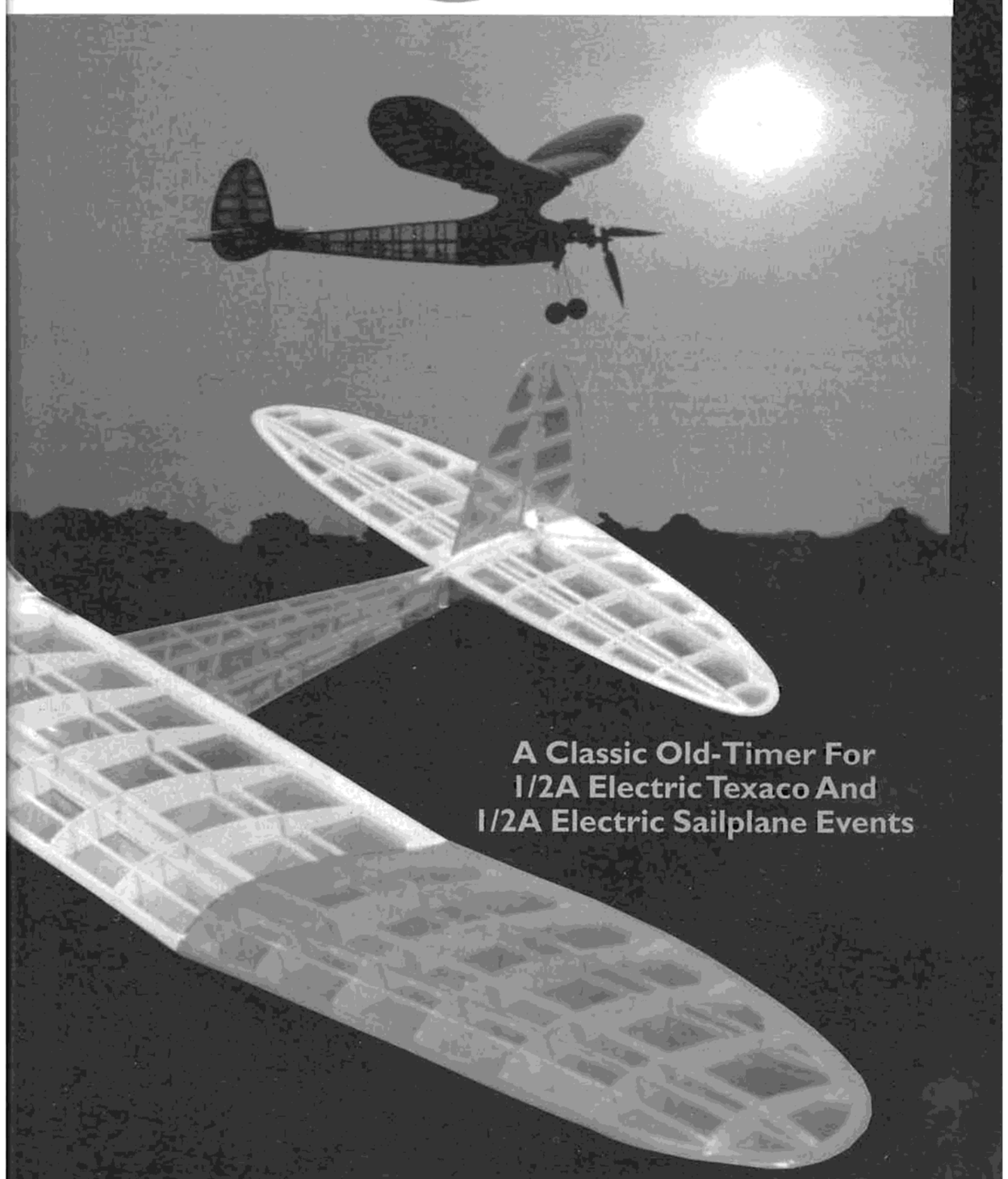
PLAYBOY SR. 425 (Electric)
Designed by:
Joe Elgin (1941) — Updated & Scaled By Bob Aberle
TYPE AIRCRAFT
Old-Timer — Electric
WINGSPAN
58 Inches
WING CHORD
7.34 Inches (Avg.)
TOTAL WING AREA
425 Sq. In.
WING LOCATION
Top Of Pylon
AIRFOIL
Modified Goldberg G-5
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
1-1/2" (Dihedral), 3" (Polyhedral)
OVERALL FUSELAGE LENGTH
30 Inches
RADIO COMPARTMENT SIZE
(L) 6" (W) 2-1/4" (H) 3-1/4"
STABILIZER SPAN
20-1/2 Inches
STABILIZER CHORD (inc. elev.)
5-1/4 Inches (Avg.)
STABILIZER AREA
108 Sq. In.
STAB AIRFOIL SECTION
Modified Clark Y
STABILIZER LOCATION
Top Of Fuselage
VERTICAL FIN HEIGHT
6 Inches
VERTICAL FIN WIDTH (inc. rud.)
4-1/2 Inches (Avg.)
REC. MOTOR SIZE
Speed 400 (7.2V Winding)
BATTERY SIZE
7 Cell 500 AR
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
3
CONTROL FUNCTIONS
Rud., Elev., Throt.
C.G. (from L.E.)
4.0 Inches
ELEVATOR THROWS
1/2" Up — 1/2" Down
AILERON THROWS
—
RUDDER THROWS
3/4" Left — 3/4" Right
SIDETHRUST
—
DOWNTHRUST/UPTHRUST
—

BASIC MATERIALS USED IN CONSTRUCTION
Fuselage ..... Balsa, Ply & Spruce
Wing ..... Balsa & Spruce
Empennage ..... Balsa
Wt. Ready To Fly . 24.9 Oz. (1 Lb., 8.9 Oz.)
Wing Loading ..... 8.4 Oz./Sq. Ft.



By Bob Aberlee

Playboy Sr. 425. Note prop blades facing forward with the help of a rubber band. This prevents the folding prop blades from hitting the pylon as the motor is turned on.



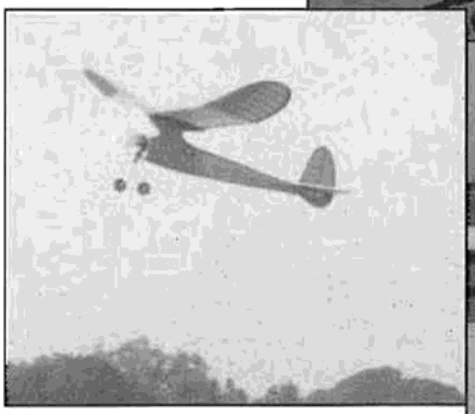
A Classic Old-Timer For 1/2A Electric Texaco And 1/2A Electric Sailplane Events

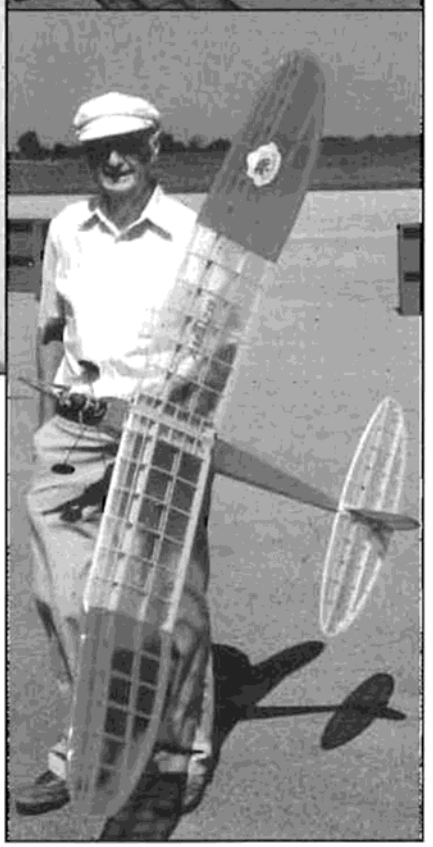
LEFT: Author, Bob Aberle, holding his 425 square inch version of the famous Joe Elgin design, Playboy Senior. This electric-powered version is intended for the new 1/2A electric Texaco and the 1/2A electric sailplane events being flown at the AMA E-Nats.

BELOW: Bob's granddaughter, Allison May Parkes, at 2-1/2, still can appreciate Grandpa's new electric creation.

ABOUT THE AUTHOR

This is Bob's first article for RCM; however, he's no newcomer to the modeling magazines, having been a life-long modeler and Technical Editor of Flying Models Magazine for over 20 years. In addition, in September 1998 Bob received the prestigious award of being inducted into the AMA Hall of Fame. Bob is currently a regular contribntor to other magazines and newsletters and we look forward to seeing many more articles from him in the future.





Mr. Joe Elgin — the Playboy designer. Joe designed the Playboy when he was a teenager back in 1940 working for the old Cleveland Model Supply Co. Joe is holding Bob Aberle's Playboy Sr. 630 with which Bob won a first place in AMA Class-B Electric Old Timer at the 1996 E-Nats. In previous meetings, Joe has even flown one of Bob's fleet of Playboys.

Since the summer of 1995, the National Electric Aircraft Council (NEAC) has been helping the AMA run the Electric National Championship competition (or E-Nats, as we call it) at their headquarter's flying site in Muncie, Indiana. Regulation electric-powered events are held (per the AMA Rule Book) for Class A & B electric Sailplane and Class A & B electric Old-Timer. Since 1996, the NEAC organization has been carefully developing a series of new electric events to create more interest in electric power and to provide more alternative competitions for the average flier.

In the September 1996 *Flying Models,* I did a piece on "Electric Old Timers." The substance of that article was how to go about converting existing Old-Timer models to electric power. One of the specific thrusts covered the possibility of running a Class 1/2A electric Texaco event. The original thought process was to simply take existing 1/2A Texaco models, intended for Society of Antique Modelers (SAM) contests and convert them to electric power. In the article, I showed how to convert a popular John Tatone Atomizer design from Cox Texaco .049 glow power to electric.

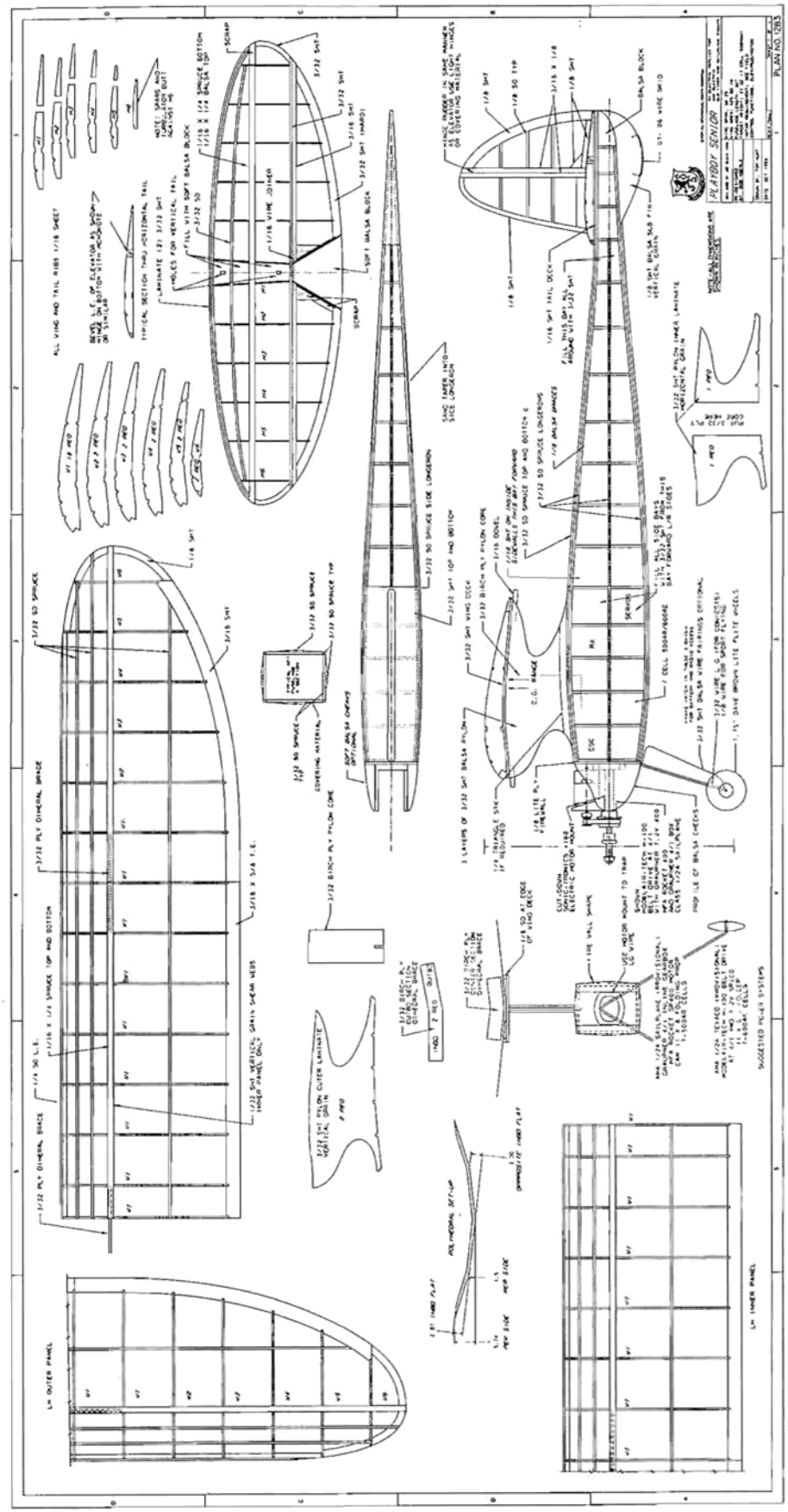
At the 1996 E-Nats, about six of us showed up with our converted 1/2A Texaco models. The rules were simple. Power was limited to the Speed-400 size electric motor. Battery packs could contain no more than 7 cells and the capacity was limited to 600 mAh. The object was to fully exhaust the battery pack while attempting to make a total flight time of 15 minutes. During the flight, the electric motor could be turned on and off as desired by the pilot. As was the case with the SAM 1/2A glow-powered event, the model had to have been designed, published, or kitted prior to December 31, 1942. The size of the model was not limited, but most of the glow engine designs seemed to end up around 300 square inches. Although the SAM rules imposed a minimum wing loading of 8 oz./sq. ft., the electric counterpart had no weight or wing loading restrictions. Quickly we learned that about the lightest weight we could build one of these models was around 20-21 ounces. By 1997, with one year

experience under our belts, the average 1/2A electric Texaco model was up to around 400 sq. in. to gain the advantage of lighter wing loading.

The good news is that this particular provisional electric event has been growing each year. So much so, that soon the event will be proposed to the AMA Rules Committee for official sanctioned status. There is also the possibility that a 1/2A electric Texaco scale event might also be developed. Before I go any further, I might explain that the use of the term "1/2A" with regard to electric power is just something that has caught on over the years with electric fliers. Some day we may have different designations but, for now, please just accept it as a simple form of identification.

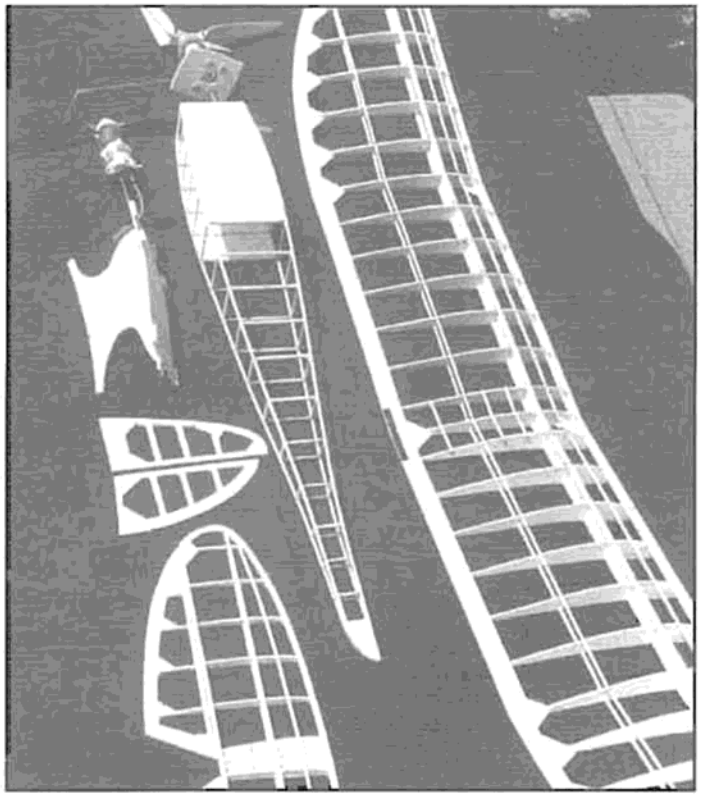
Since the electric modeler has settled more on 400 to 450 sq. in. size models for electric Texaco, the ability to use existing SAM rule 1/2A glow-powered Texaco model kits has been essentially eliminated. To my knowledge there are no kits as yet available for these larger size Old-Timers. Tom Hunt of Modelair-Tech can make available plans for many of the popular old timer designs at the 425 square inch size. You can reach Tom at P.O. Box 1467, Lake Grove, NY 11755-0867 and ask for availability and prices. Since most of these plans must be electronically reduced on a computer graphics system, you will be required to select your own wood sizes.

For my purposes, I decided on the Joe Elgin designed Playboy Senior as my choice for a 1/2A electric Texaco model. I flew a full-size version, with an Orwick .64 ignition engine, very successfully for many years in regular SAM competitions. More recently, I built a 630 sq. in. version from Tom Hunt plans and with it won a first in Class-B electric Old-Timer at the 1996 E-Nats. So the choice was obvious for me. But, interestingly, I learned an excellent idea while attending the 1997 E-Nats from Electric National Championship flier, Bill Jenkins of Memphis, TN. Bill showed up at the 1997 E-Nats with a 425 sq. in. version of the Foote Westerner. To save on building time and transporting space, Bill configured his Westerner to be able to fly in both the 1/2A electric Texaco event as well as the other provisional event, 1/2A electric sailplane. For the Texaco event you need a slow turning prop and a motor system that draws very little power, like something in the order of 4 to 5 amps. With that low current you could expect to obtain total

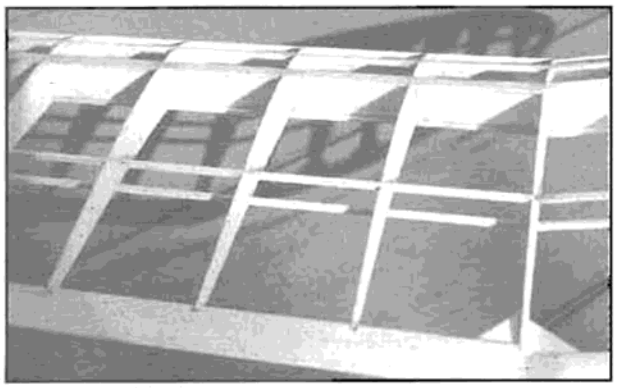


PLAN #1283

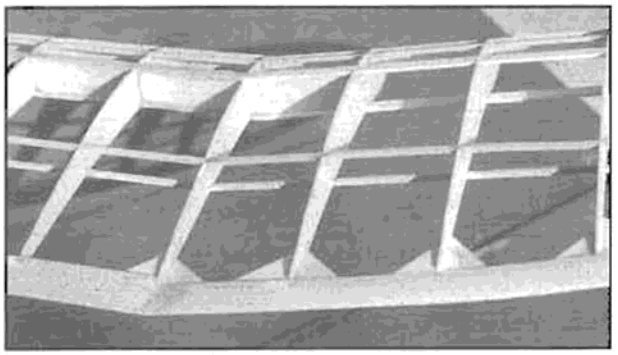
FULL-SIZED PLANS AVAILABLE ON PAGE 190



Neat lightweight structure. Certain sticks are spruce rather than balsa material for extra strength.



Note the vertical grain balsa webs between the main wing spars. This is very important.



Dihedral and polyhedral braces are cut from plywood sheet material.

motor run times of 7 to 9 minutes. Remember, in electric Texaco, you are looking for 15-minute total flight time.

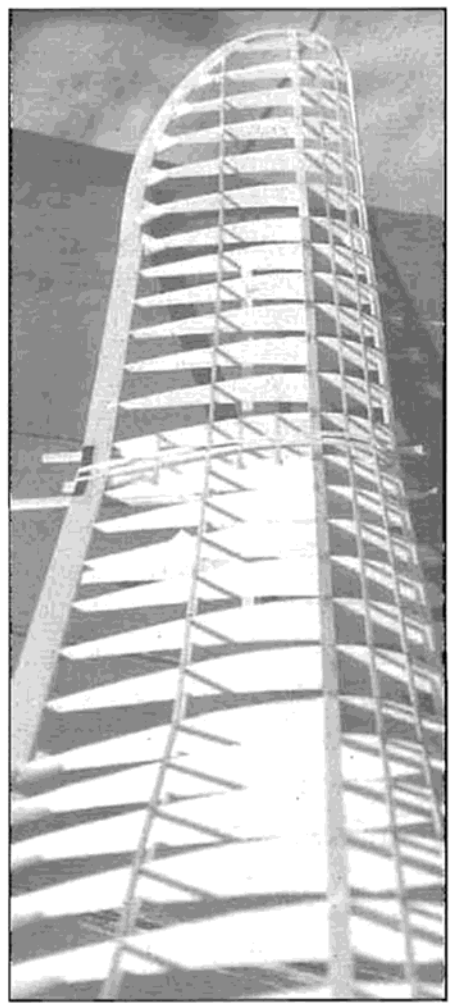
In the 1/2A electric Sailplane event, you are back to a limited motor run (LMR) or duration class of competition. The Speed 400 size electric motor is limited to 90 seconds duration and the total flight time must be exactly 8 minutes, combined with points for achieving an accurate spot landing. So, for this event, you need high prop revs, resulting in high motor current (like 10-12 amps) so that you can obtain a high altitude in the 90 second period. As it turns out, both events require a different type Speed 400 size motor, along with different gear or belt-drive reductions and different size propellers. The model itself can be identical. The trick to this multi-event concept is being able to quickly convert from one power system to the other.

About the Playboy Sr.

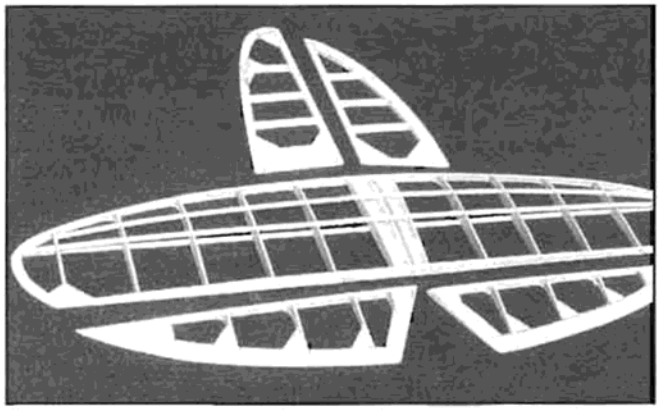
Over the years I've had a chance to meet and talk with Playboy designer, Joe Elgin. I even had the pleasure of watching Joe fly my own Playboy while attending his commemorative meet in Donnelsville, Ohio, back in 1992. One of the most interesting items associated with the Playboy design was Joe Elgin's choice of the wing airfoil. At a quick glance, it appears to be the NACA 6409 airfoil that was so popular with free-flight fliers of the forties and even later. Joe stated in a John Pond column (*Model Builder*, August 1992, page 38) that his airfoil was actually a modified Goldberg G-5. It is close to the NACA 6409, but not exactly the same. Anyone who has flown Playboys will tell you that it seems to be the first plane in the sky to find a thermal and the last to fall out of it. Maybe that's a little exaggerated, but the fact is the glide is always slow with a low sink rate.

CONSTRUCTION

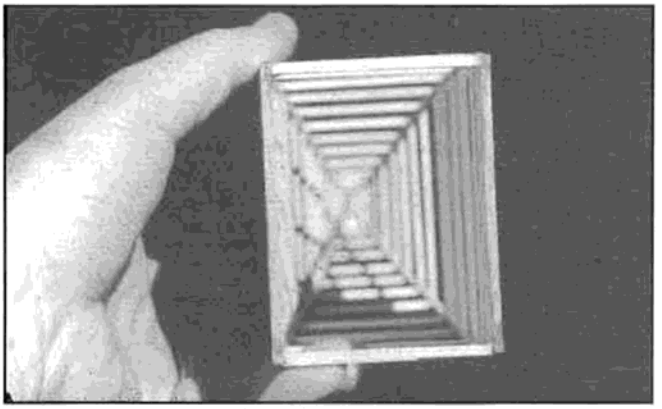
As with any Old-Timer design, there are always a lot of sticks and pieces to contend with. You can't buy an ARF Old-Timer for sure. I like to make up my own "kit" by first cutting out all the wing/stab ribs and other parts using my own paper templates and then selecting and identifying all the stick wood material. There are several critical areas where the best choice of stick material is spruce rather than balsa. For example, the 3/32" sq. material for the fuselage sides and crosspieces are made from spruce. Spruce spars are very important for the integrity of the wing structure. I also chose 3/32" sq. spruce for the wing turbulator spars on the top, forward section of the wing. Balsa, for this application, would crack easily when handling and transporting.



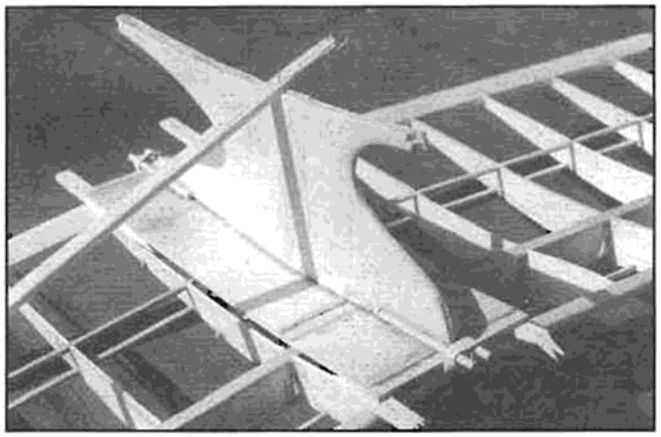
Perfect symmetry. Every part is aligned just right. All the wing ribs and parts must be hand-fashioned.



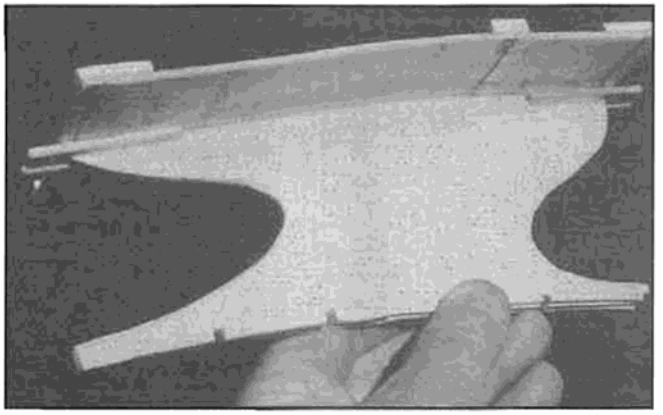
Stab, elevators, vertical fin, and rudder are easy to make and light in weight. Fin fits into a slot created by two stab ribs which are just the right distance apart.



The sign of careful building techniques. Bob looks down the inside of his new fuselage made entirely from 3/32" sq. spruce sticks and pieces.



Important: Pylon assembly is held in place under the wing center section with rubber bands as it normally would. Eyeball-align the pylon and hold in place temporarily with a balsa stick until the cement hardens.



The pylon assembly itself is a sandwich of three pieces of balsa with a plywood piece in the center (see plans for details). The wing platform contains spruce inserts at the leading and trailing edges and at the main spar location. 1/8" dowels on either side of the pylon act as rubber band anchor points.

You will note in the photos that the wing mount platform and the pylon are first attached to the bottom of the wing structure using a few rubber bands. After some eyeball alignment, the platform is cemented to the pylon. When dry, remove the wing and you are ready to attach the pylon assembly to the top, forward section of the fuselage.

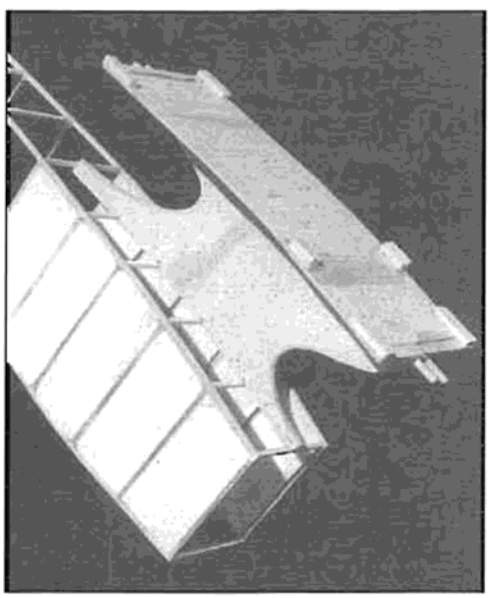
Just for information, I built the wing first. Then, I made up the pylon sandwich and wing platform and took care of that assembly as just described. The stab/elevators and vertical fin/rudder were built next and covered. Then the fuselage was constructed. The covered stab and fin were cemented to the uncovered fuse. Then the pylon was attached. Next came the complete radio installation including the control rod wires (.030 inch diameter wire supported with pieces of inner Gold 'N Rod tubing). The radio receiver antenna was run along the inside of the fuselage and out the tail. The last step was to cover the fuselage. Get the idea!

On the front of the 3/32" plywood firewall I made up a spacer of the same material to accept the 3/32" diameter landing gear strut. This gear, with its wheels, is only used for the electric Texaco configuration. For the 1/2A electric sailplane event, the gear is removed to save weight and reduce drag.

Electric Motor Systems

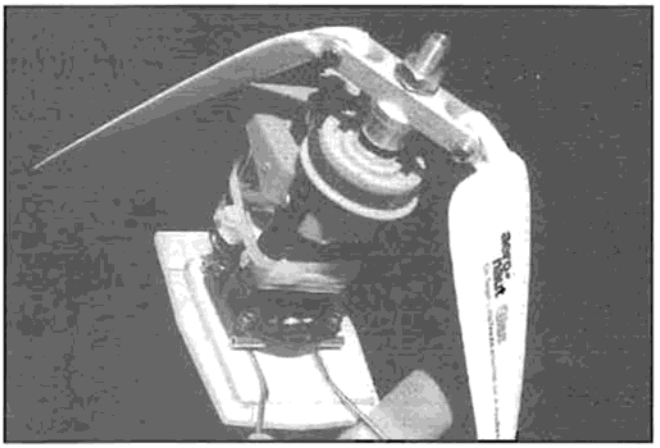
The popular Sonic-Tronics electric motor mount was used for both motor systems. Since this mount is adjustable, it is important that the mounting holes on both configurations fit the same holes in the firewall. In other words, you must make them interchangeable. As you will soon learn, each of these motor systems will have a different weight which will require some compensating to maintain the correct balance point (C.G.) of the model.

For 1/2A electric, Texaco the motor of choice is the Speed 400 with a 7.2 volt winding. To this motor is attached a Modelair-Tech H-100 belt drive with a 4:1 reduction. The best prop for this is an Aeronaut (white) 11 x 6-1/2 folder. Weight of this motor, belt drive, prop, and mount is 6.2 ounces. Because the Texaco event allows the motor to be turned on and off in flight,

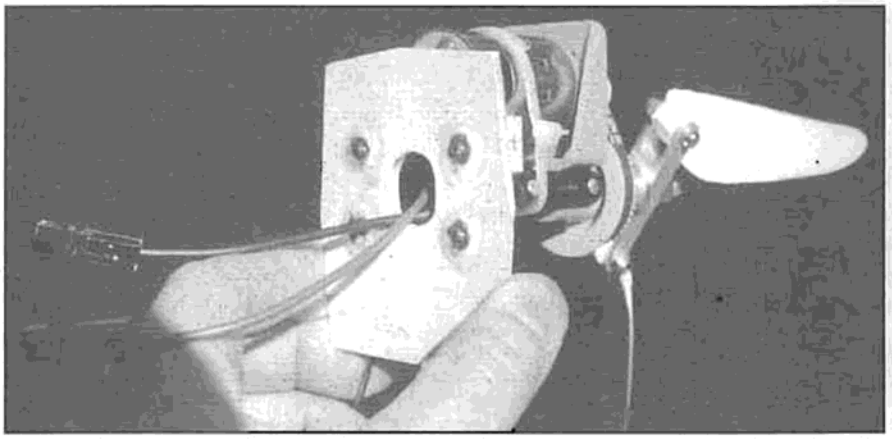


Pylon assembly is now installed on top forward section of fuselage.

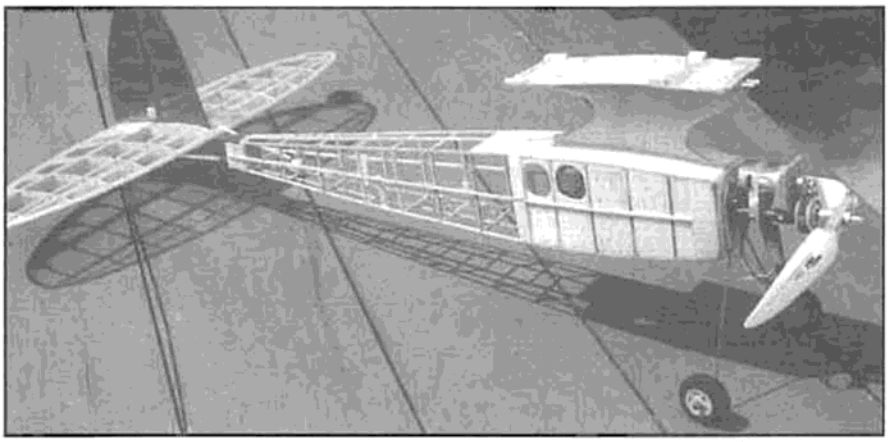
Hatch cover allows access to battery area and radio system.



1/2A electric Texaco motor system. Note how the landing gear wire fits into a 3/32" plywood spacer on front of the firewall.



The motor cables pass through the rear of the motor mount, then through a hole in the firewall and, then, inside the fuselage for connection to the motor speed controller.



Again, the stab and fin are covered and then cemented in place on the uncovered fuselage. The radio system and control wires are installed next and finally the fuselage is covered.

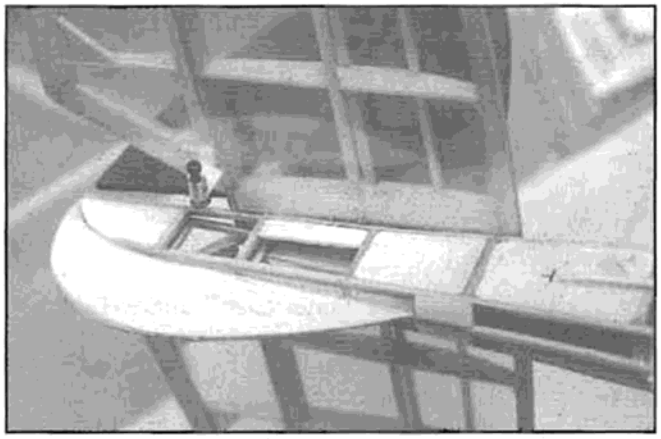
Lower forward fuselage shot showing the landing gear. Radio system has already been installed. Hatch cover is open.

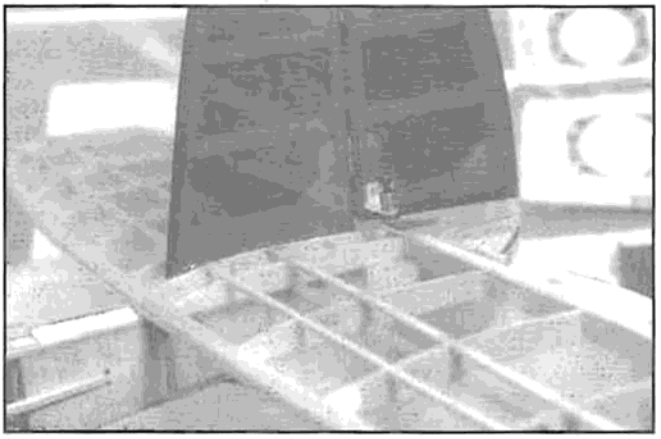
you will need to place a small rubber band on the prop blades at the hub to force the blades to move into the forward position when the motor is turned off. If the blades were allowed to fold rearward, they just might ram into the pylon on start-up.

The 1/2A electric sailplane configuration requires an MFA Rocket 400 motor which has a 5-volt winding. These motors can be obtained from Hobby Lobby International (5614 Franklin Pike Circle, Brentwood, TN 37027 or 615-373-1444). The Hobby Lobby catalog number for this motor is HLH780. A gearbox is used for this application with a 4:1 reduction. It is made by Graupner and can also be obtained from Hobby Lobby. The catalog number for this is GR1718. Be advised that this gearbox comes with a 6 volt motor which is not used in this application. The prop of choice is a Graupner Cam Gear Prop (folder) size 11 x 8, again available from Hobby Lobby (catalog number GPC11080). The components for this system will be a little costly, but the performance will make it all worthwhile. The total weight of this motor, gearbox, prop, and mount is 4.6 ounces (or 1.6 ounces lighter than the Texaco system).

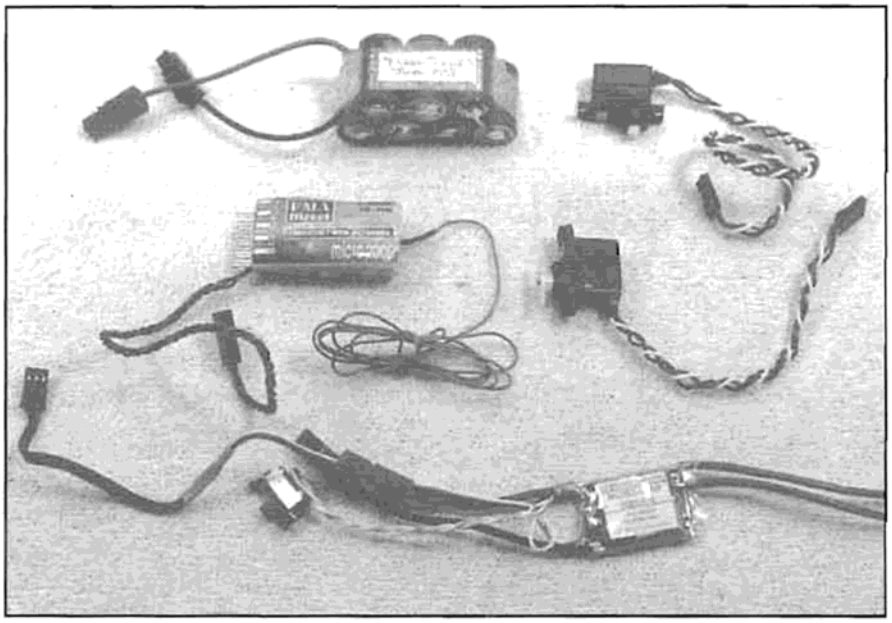
Covering

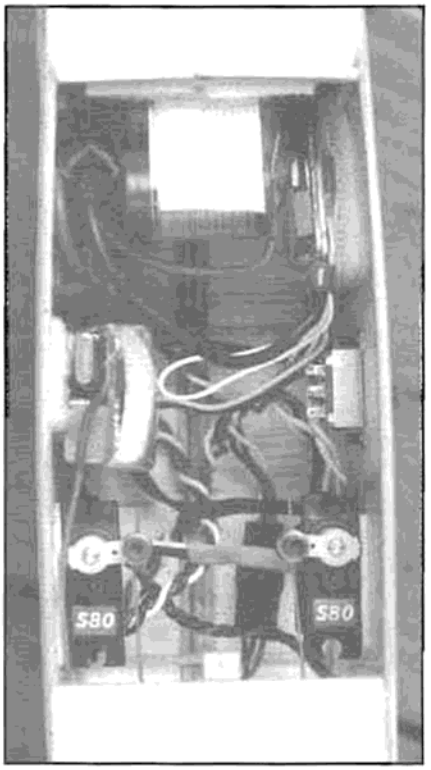
My choice of covering was the Goldberg Ultracote Transparent Lite. This is a very lightweight transparent covering material that is easy to apply and comes in some attractive colors,



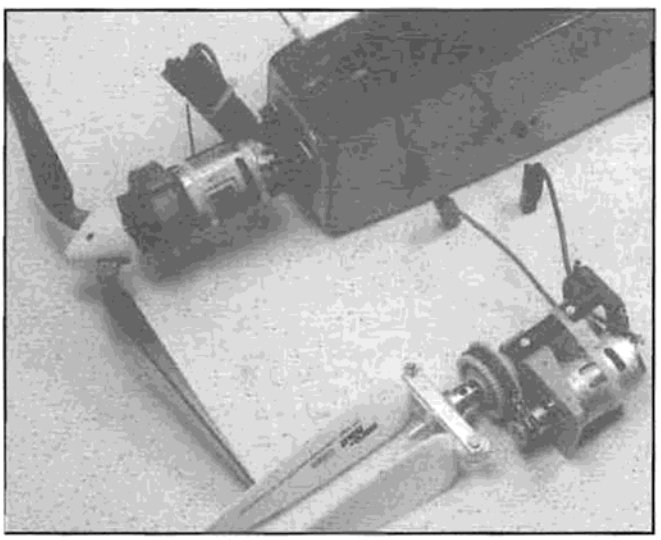


Steel .030" control wires hook up to the control horns with these Du-Bro EZ connectors. Lower tail fin has a thin wire cemented in place to act as a tail skid.

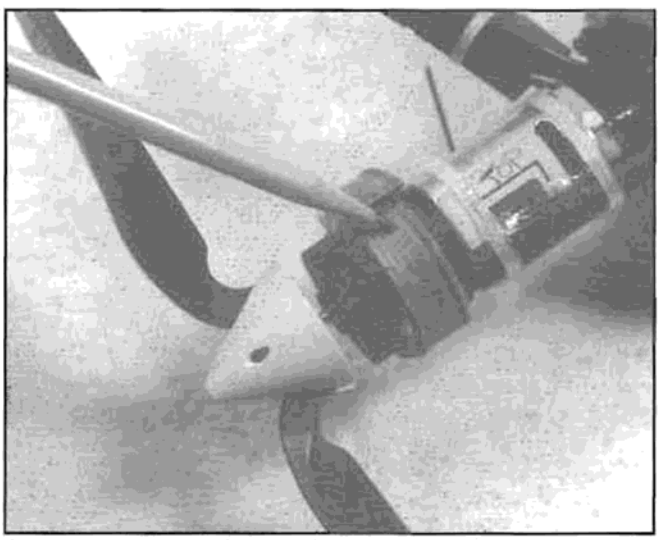




ABOVE: The radio and motor system components. FMA Direct Micro-2000 Rx, two FMA Direct S-80 micro servos, Gordon Tarling ESC and a 7-cell 500 AR battery pack. RIGHT: Inside the radio compartment. The two S-80 servos for rudder and elevator control are taped to opposing sides of the fuselage (aft). In the middle is the Micro-2000 Rx and the ESC switch. Forward towards the firewall is the Gordon Tarling ESC taped to the fuselage side and up against the firewall is the battery pack, held in place with Velcro-type tape.



Important: The two different motor systems. Both use the Sonic-Tronics motor mounts. Mounted on the model is the MFA Rocket 400 motor and Graupner gearbox set up for 1/2A electric sailplane. The Speed 400 (7.2 volt) motor and Modelair-Tech H-100 belt drive for 1/2A electric Texaco is on the right.



Important: When flying the 1/2A electric sailplane event, the motor system is lighter in weight and the landing gear can be removed. This tends to make the model tail heavy, so a 1.5 ounce piece of sheet lead was wrapped around the front of the gearbox assembly to compensate.

like purple, yellow, red, and even a white. This product may be in short supply. Be advised that Hobby Lobby has a comparable product, just call them and ask about it. Best suggestion for using this material is to have two heating irons. One is set at a low setting to first attach the covering. The other is set to a much higher temperature for the final adhesion and shrinking.

Final Weights And Balance

The choice of a 7-cell battery pack is either 600 mAh AE cells for 1/2A electric Texaco or 500 AR cells for 1/2A electric Sailplane. Both packs weigh an identical 5.0 ounces. The total flying weight of my Playboy Sr. 425 for the electric Texaco event was 24.9 oz. yielding a wing loading of 8.4 oz./sq. ft. I probably would have liked it to be at 22.0 ounces, but the performance was still excellent. Center of Gravity point is just about 50% of the wing chord.

The 1/2A electric sailplane version total weight was 22.3 ounces, because the motor system weighed less (1.6 ounces) and the landing gear was removed (1.0 ounce). But the lighter weight caused a noticeable aft shift in the C.G. that had to be compensated with a piece of lead weighing 1.5 ounces placed on the motor casing near the prop hub. Total weight was then 23.8 ounces with a resulting wing loading of 8.07 oz./sq. ft.

Radio System

I had in mind to use the new FMA Direct Tetra receiver but, unfortunately, the only one in my current inventory was already assigned to another model. As an alternative, I resorted to my FMA Direct Micro-2000 receiver which only weighs a few tenths of an ounce more. For the servos, I used two of the FMA Direct S-80 sub-micro servos and a Gordon Tarling (from Great Britain) Micro-Star 20/BEC speed controller. A lighter weight set of components would be the Tetra receiver, with two new FMA S-60 sub-micro servos and the Castle Creations Pixie-14 ESC (Pat DelCastillo, 1625 Drury Ln., Olathe, KS 66062). With those components you might possibly shave a full ounce off the weight of my existing equipment. By the way, I operated my R/C system with an Airtronics Radiant transmitter on CH-04 (Six Meters).

What Happened At The 1998 E-Nats?

Well, quite honestly, I didn't make it. The christening of my new grandson coincided with the big contest and, obviously, there was only one choice to be made. My flying buddy and former business partner, Tom Hunt, took my little Playboy Sr. 425 to the Muncie event just to see how it would perform in the 1/2A electric Texaco category. On the first official flight, while climbing out during the first minute of motor run time, the folding prop flew right off the motor and the resulting duration was under two minutes. As it turned out, I had forgotten to tighten the prop adapter on the H-100 belt drive -- end of story. To prove a point and with the prop reattached, Tom put in a second flight of 14-1/2 minutes, in rather poor weather, which was very close to a 15-minute max. The bottom line, the little 425 Playboy has definite potential. Meantime, Tom is giving me lessons on prop tightening.

At home, I have had many flights with the 1/2A electric sailplane motor system and the landing gear removed. With the allotted 90 second motor run, you can put this model almost out of sight. Getting the total 8-minute flight time is no problem. But the superb gliding characteristics of the Playboy design makes it hard to spot-land every time. It just wants to go on floating.

A Final Comment

Back in June 1998, I did the initial test flights of this model at sunrise with Tom Hunt. The choice for our flying sight that morning was the very last remaining portion of the old Grumman 6,600' runway at their Bethpage, Long Island facility. Closed since the early 90's, bits and pieces of this famous runway, that played first flight host to ten thousand or more WWII naval aircraft, has been sold off to commercial developers. On that morning back in June, I took off my Playboy and made my last series of flights on that last portion of runway. Several days later we were asked to stop flying altogether because of impending construction. The end of an era in aviation!