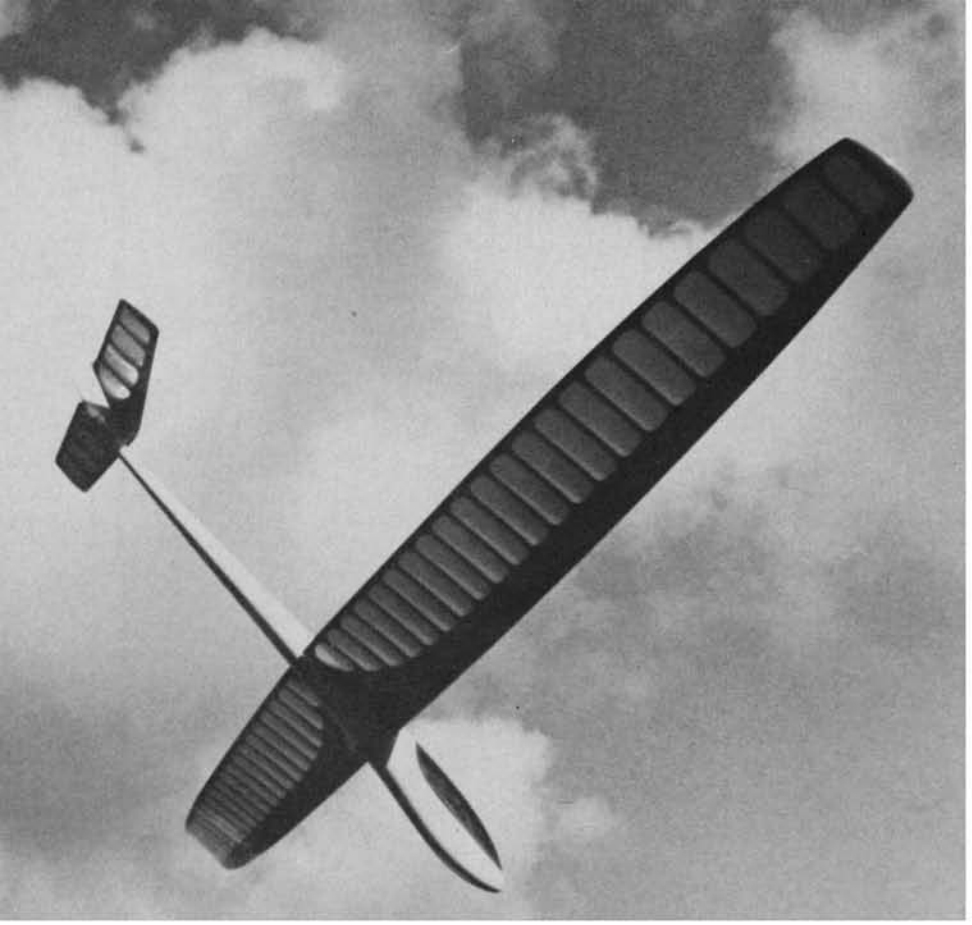


Photos: Gerald Julian

An FM Product Review:

® Hobie Hawk

by Gerald Julian

With those graceful wings, there is no mistaking a Hobie Hawk in the air or on the ground. It's a well engineered kit.

Love at first sight! That was my first impression of the Hobie Hawk the first time I saw it poised for its upward flight. That flight was accomplished by using a "hi-start"—100 feet of surgical tubing joined to 300 feet of forty-pound test monofilament fishing line. The line was stretched taut between a stake driven into the ground and the other end attached to a tow hook beneath the Hawk's streamline body. The pilot releases the plane and, like a bird, the sailplane wings away to become airborne. Higher and higher it climbs with its distinctive silhouette, the upswept curve of the elliptical-dihedral wings and the drooped nose of its extremely attractive fuselage, until, at the apogee of the launch curve, it pauses, the launch chute drops away and the Hawk banks for a slow turn, the sun glinting through the translucent blue wings. A series of gentle figure-eight turns, a loop and then a shallow glide brings the sailplane gently skidding to a soft landing five feet from the initial launch spot.

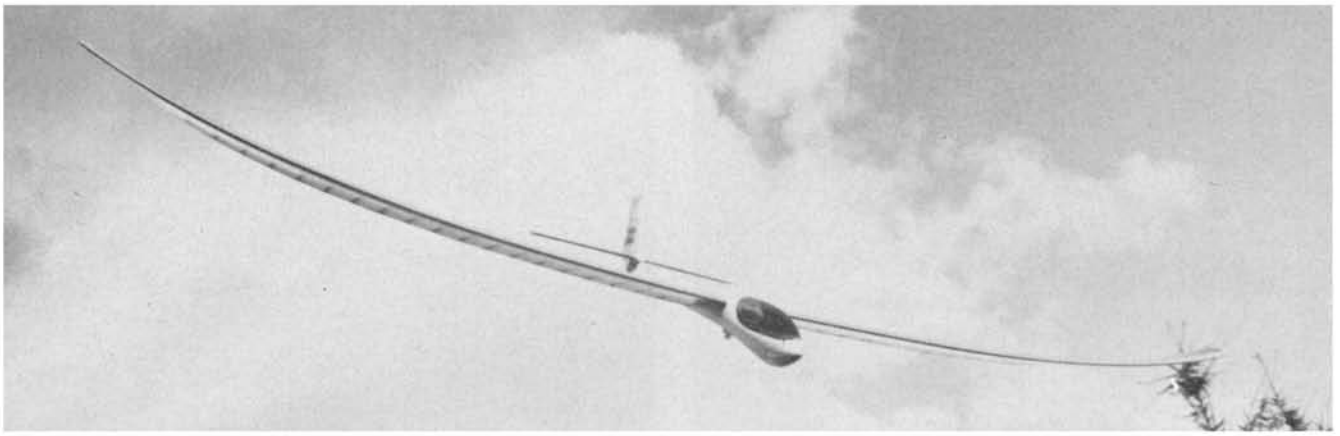
Being an avid R/C sailboat fan, the thought of flying using no fuel, having no messy, smelly plane to clean and having a flying machine so functionally sleek that it seems to be in motion even when sitting still, was too overpowering to overlook. Closer investigation revealed that the sailplane was the Hobie Hawk, a beautifully sculptured RC sailplane produced by the Hobie Model Company, a division of the Coast Catamaran Corporation located at 2026 McGaw Ave., Irvine, California 92705. The Hobie Hawk is available through hobby dealers in two forms; as a semi-kit, which must be covered and finished in addition to the installation of the radio, and as a complete finished sailplane, needing only a couple of hours of time for the installation of the radio gear. The price of the kit is $129 and the ready-to-fly less radio model sells for $159 and can be ordered from Hobie Model Company direct if the dealer in your area doesn't stock them.

A closer inspection of the Hawk revealed that this was truly a bird of a new breed. The use of plastics and their manufacturing qualities was self-evident in the final product. My background as an industrial designer and now a teacher of plastics education in our local high school and vocational center made me realize that many hours of testing, engineering, and finding new techniques were involved in getting this glider into production.

One doesn't have to do much research to find that the man behind the development of the Hobie Hawk was Hobie Alter, the chairman of the board of Coast Catamaran Corporation, producers of the Hobie Cat Line of sailing catamarans and surfboards. Among the devotees of the sailing and surfing sports, the name Hobie is synonymous with the "best" and "fastest" equipment for both of the sports. The Hobie Hawk is no exception as the high quality of the finished sailplane and its soaring ability prove out. By this time, the adrenalin was starting to flow and a semi-kit was obtained to evaluate the Hawk as a building article and a beginners sailplane.

The kit arrived in a molded styrofoam box with molded dividers which make an excellent shipping container to protect the kit and also can be converted into a carrying case for the completed model. The manual supplied with the model kit is one of the best I have ever seen. Within its 48 pages, you not only have a step by step installation and assembly procedure, but the related information on initial trimming, flying of the model, materials compatability, and finishing makes assembling the kit a real pleasure.

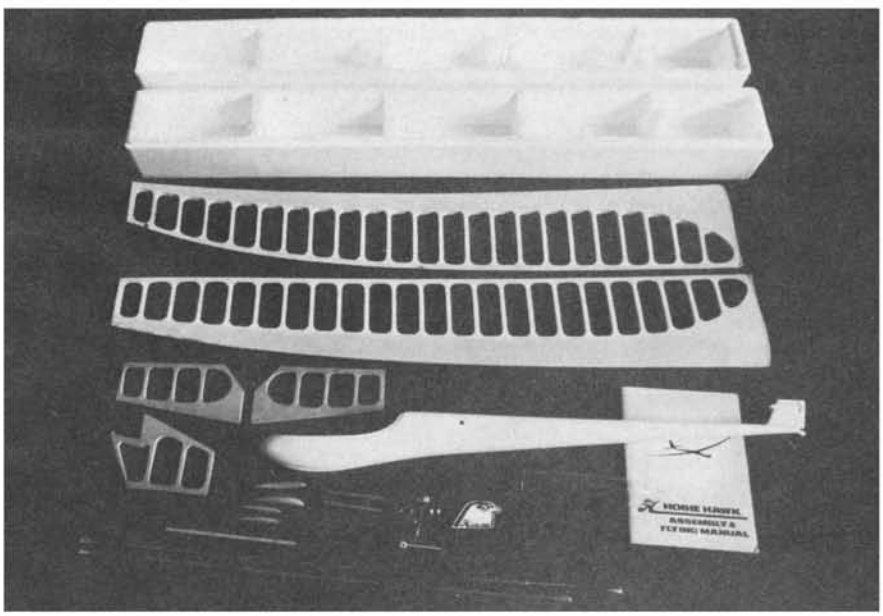
The Hobie Hawk is an unusual model glider in many different ways. The fuselage is a composition of three different plastic materials. The nose cone is made from crosslinked polyethylene that is formed by rotationally molding the polyethylene powder inside a metal mold that is heated and then rotated around two axis, flowing the material over the inside of the heated mold and curing the material in the shape of the mold at the same time. Then the mold is separated and the nose cone is removed. The dorsal piece is injection molded of A.B.S. (acrylonitrile-butadiene-styrene, which shows why they abbreviate it A.B.S.) plastic. The dorsal piece and the nose cone are then connected together with a tail cone which is composed of six layers of pre-impregnated epoxy fiberglass and the three pieces are then joined and cured in a jig to assure the greatest amount of accuracy in alignment. The wing is of plywood covered foam construction. The top skin is a layer of 1/32-inch plywood with a core of high-density styrofoam and a bottom skin of 1/64-inch plywood. A spruce leading edge completes the assembly. The curved dihedral of the wing assembly is formed during the production of the wing.

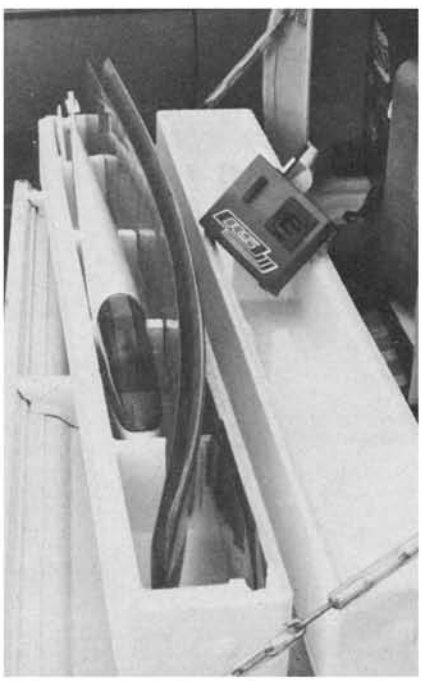


The open structure look is obtained by routing away sections after the wing is assembled and at the same time, lightening the wing assembly. The rudder and flying stabilizer are constructed using the same techniques as incorporated in the wing structure. The covering consists of 1/64-inch plywood skins with the same high-density styrofoam core and incorporate molded tips to complete the assembly. The wings and stabilizer only need light sanding of the plywood surfaces, forming of the leading edges and installation of the wing mounting tubes and the molded tips before the surfaces are completely covered with MonoKote or one of the several alternate brand-name synthetic covering materials.

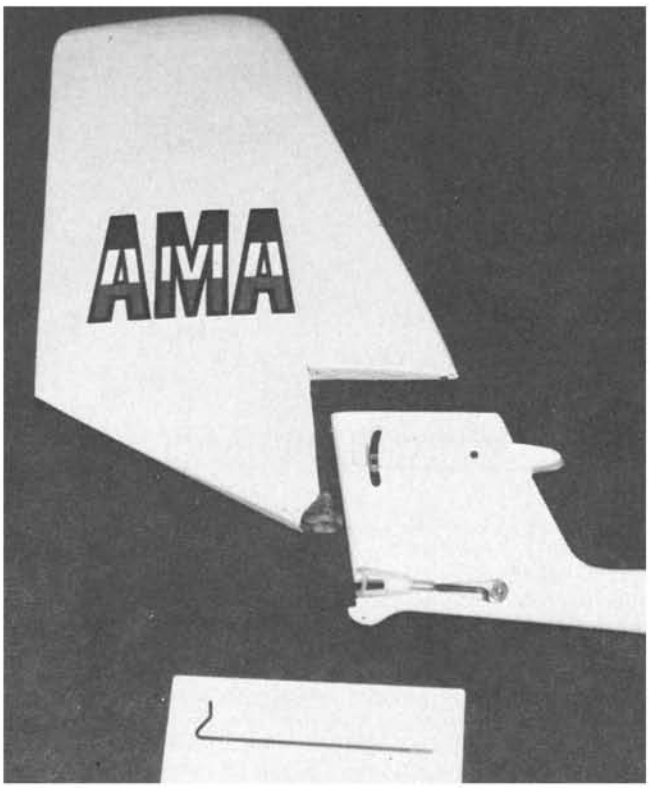
The covering of the wing, stabilizer, and rudder with the new synthetic plastic covering materials was a first for me. My past experiences with flying machines have been restricted to a few hand launched gliders and a few controline carrier and scale models. The procedure for these was to cover the surfaces with balsa sheet or silkspan and fill the surface with layers of filler, primer, and surface coats until the expected finish was achieved. When reading the advantages of the one shot modern plastic coverings, I was understandably apprehensive about trying one of these miracle coverings. I chose to use MonoKote because it was available at my local hobby store and my fellow modelers were familiar with its use and would be available for help if required it. Illustrations in the Hobie Hawk instruction manual indicate how to get all of the pieces of covering from a single roll of MonoKote, but it's nip-n-tuck to keep from not having to piece some of the surfaces. The only caution expressed in applying the covering was not to get the structure to hot, as excessive heat could cause the foam to distort, thus changing the contour of the surface or melting the foam core. The rudder was the first surface tackled so I first cleaned the surfaces with a vacuum cleaner and then wiped the surface clean with a tack-rag to insure that all traces of dust were removed. The MonoKote was then cut a little oversized and the material attached to the surfaces with the heat of a sealing iron along the leading and trailing edges. The root and tip sections were attached and the surface turned over for the application of the covering to the other side. When the covering was attached to the other surface, small holes were pricked into the corner of each routed section on one side of the rudder so that the air inside the sections could fluctuate or vary within the sections without changing the contour of the section. The surfaces were then shrunk using the iron until the covering was taut. The experience, while at first being a hesitant one, provde to be a positive one as the covering went on as illustrated and an excellent surface resulted. The next surface to tackle was the stabilizer and in quick order it was finished and laid aside until a later time.

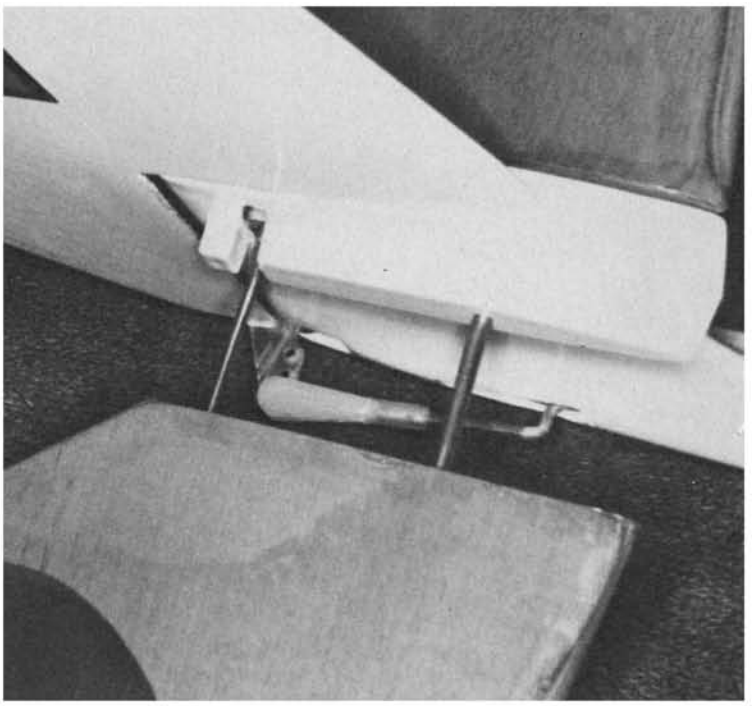
The wings were the only surfaces left, because their compound curves had resulted in their being left in the shipping carton until last. Reassuring comments and help from a friend, assuring me that all would turn out well, again sent us to the instruction manual for another last reading of the covering instructions for the wings. The recommended method of placing ten pounds of weight on the root area of the wing and a five pound minimum weight on the tip of the wing to flatten it spanwise to about 90% caused some caution, but reassurance that replacement parts were readily available helped in my getting up enough nerve to tackle the covering task. The use of





This is the Hobie Hawk as it comes to you in kit form: the foam box at top is also its carrying case and as you can see the kit itself is very complete including the push-rods that are already set-up.





Rudder assembly (**at left**) has a metal wire that forms the hinge pin when it is inserted into the pivot points. This is a shot (**above**) taken of the tail cone assembly from above showing the rudder already in place.

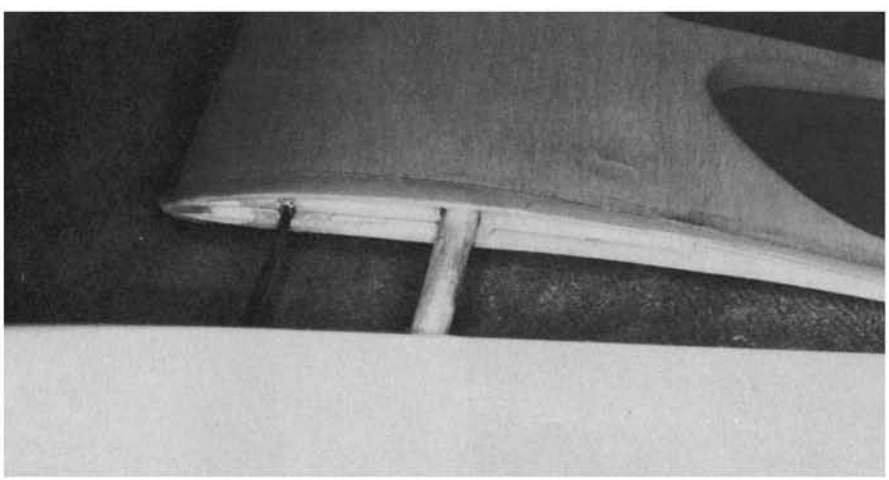
weights necessitate tacking the covering along the leading and trailing edges and then changing the position of the weights to tack down the areas not accessable during the initial tacking process. Because we cut the MonoKote very close, we decided to use the hold-down for a drafting tool holder to fasten down the root section of the wing by utilizing the wing mounting tube and the edge of the table. My friend held down the tip until the wing was flattened to the proper position while I tacked the leading and trailing edges of the wing with the heating iron until the covering adhered to the full length of the wing. The wing was then reversed and the bottom covered without the need to flatten the wing surface. The lower surface requires that you do tack the covering to the ribs before shrinking the film because of the undercamber of the airfoil. The job was now complete and we got a perfect covering the first time around.

After covering the model, check the wash-out of the wing tip areas and if these are not within specifications, adjustments should be made as outlined in the instructions. Because of the excellent directions in the Hobie Hawk manual, I would again like to recommend the semi-kit to any person who has the slightest inkling of building his own model. The procedure is so laid out, that the time spent in building the model and the ease of it's completion, with the added incentive that "you did it yourself" are ample reward for the effort spent.

The radio control unit chosen for controlling the Hobie Hawk was the RS20 system. Because the weight and size are a big consideration, the RS20 was a natural with its semi-brick configuration and small weight. The RS20 is probably one of the smallest, lightest, and one of the most reliable systems available at the present time. The RS20 was specifically designed for use in RC gliders and small 2 channel powered airplanes. Careful engineering, top quality electronics components, and a great deal of hand crafting assure the buyer that they are buying one of the best 2 channel systems on the market.

While the radio installation in the glider is simple, the use of a semi brick unit reduces the actual operation to that of cutting only three openings in the fuselage. One is for the servo assembly and the other two are for the external switch extension and a charging jack located on the outside of the fuselage to make recharging of the airborne batteries easier without the removal of the canopy.

Before the holes are cut in the cockpit area, the model should be balanced using the method shown in the instruction book. After the balance is accomplished, the area for receiving the servo unit is marked and cut from the platform. Cutting of the openings can be accomplished by using a sharp knife blade to cut the polyethylene canopy platform. Holes drilled at the corner of the openings will help to get a tight fit for the servo unit, but for added insurance the servo unit should be secured to the platform with sheet metal screws. I used a Dremal Moto-Tool and a small saw attachment to cut the openings using small pieces of wood double-back taped to the platform for a guide and was able to get a press fit of the servo unit into the platform. The pushrods come all assembled and any adjustment for additional length can be accomplished by heating the glue connections and sliding the ends either



This photo shows the wing mounting rods on the Hawk and the injection molded wing root joint; for as graceful as the "Hobie Hawk" looks, the amount of beating it will take is tremendous.

in or out of the tubes at the servo ends.

Before installing the servo unit as a final assembly, I installed the tow hook, centering it in the position indicated in the instruction manual. The tow hook supplied with the kit is a bent wire and while it is quite serviceable, I was advised by friends who have flown the Hobie Hawk for awhile that I should install one of the adjustable tow hooks while the area was still easy to work in. The tow hook that I installed was the EK-Logictrol ATH-1 adjustable tow hook and it has functioned quite well for me.

The radio receiver, batteries, and servo unit can now be installed inside the fuselage. The batteries should be well wrapped with foam tape and stuffed into the nose. The receiver is installed next and then installation of the wire harness and servo unit follows. The pushrods can then be installed and adjusted to get the correct movements in the rudder and stabilizer assemblies. It is recommended that the radio antenna be taped to one of the pushrods before the pushrod is installed inside the fuselage and I found that this makes a very sanitary installation of the radio package. Installation of the switch and charging jack will then complete the radio installation.

One of the factory representatives at a local model show informed me that the factory finished models come already painted with a catalyst-hardening polyurethane paint that was supplied by the Finch company. Because of the problems of obtaining small amounts of the factory paint, I chose to use one of the marine polyurethane paints supplied in a spray can and put out by the Flecto Company of Oakland, California. With a little care and light coats at first, an excellent finish resulted and can easily be touched-up if needed.

While I was building the Hobie Hawk, I was actively seeking advice and help in setting up the sailplane and in learning the basic problems and flying aspects of the Hawk. In talking to veteran flyers, I was shortly informed of the controversial reputation that the Hawk was acquiring. Because of it's beauty and availability as a ready to fly model and also as a almost ready to fly kit, the Hawk is being purchased by many newcomers to the hobby with the results that some of these flyers are being "turned off" from soaring because of some of the flying characteristics of the Hobie Hawk. The following suggestions will dispell most of the controversy and help the beginner learn the basic concepts of soaring.

First of all, I'd like to give you a couple of suggestions on selecting a person to help you with the initial checkout and flying of the Hobie Hawk. Make sure, by actually observing the individual flying a Hawk, that the person is experienced with the Hawk because the performance and handling characteristics of the Hawk are all its own. Upon further inquiry into some of the reasons people were having problems flying or learning to fly with the Hawk, I found that many had solicited help from people who, while being good flyers, had had no experience with the characteristics of the Hawk. The resulting first flights were in some cases drastic and in a couple of cases turned the beginners off on soaring. Secondly, double check the center of gravity and tip washout before each days flying. Sitting in the sun and temperature changes can sometimes make drastic changes in the wing profile when using plastic coverings and these checks will insure that the flying surfaces are true.

I asked Ray Blatt to help me in the initial testing and flying stages. His attitude and respect for the Hawk were two positive votes in getting his help as I felt that many of those first impressions of a new activity are instrumental in keeping a person in the sport. Ray helped me by double checking the throws of the flying surfaces and test gliding to check for stability and glide angle. A few changes of the control rods and a few more test glides and we were ready to put the Hawk into the air. Needless to say, by this time my "tummy was in a tither." Ray checked the transmitter and receiver once more after hooking us up to the winch and then, after taking up a little tension on the tow line, the Hawk was off and away.

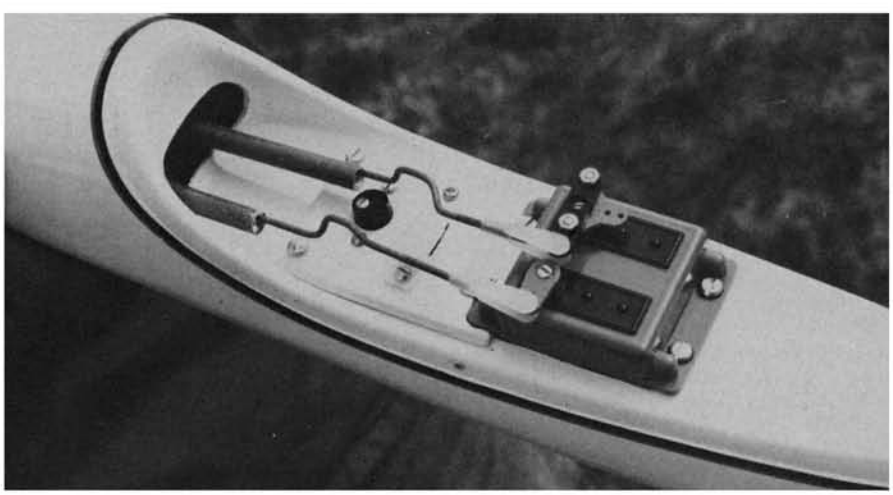
Off and away was right, right into a wing over to the left which would have resulted in a bent plane if I had been on the stick, but with Ray's experience at flying the Hawk, he corrected with the rudder and up and away it went. When I questioned Ray later about the wingover at launch, he said that when launching a Hawk on a winch or hi-start, you have to use quite a bit of down elevator for the first four or five seconds of launch or until flying speed is built up, or the Hawk, like many other sailplanes, will become "squirrely" upon launch, sometimes stalling off on a wing and prematurely returning to ground level the hard way.

Once the Hawk gets into the air, it won't take second to any other sailplane as far as gaining altitude is concerned, I've heard the term "homesick angel" mentioned many times during a Hawk launch and I feel that it describes the climbout quite effectively. Ray checked the flight characteristics of the Hawk by flying some loops, checked on the stall speed, tried some stall turns and a spin and then slid the Hawk to a gentle landing within ten feet from where we were standing. Everything checked out okay and I was getting quite anxious to try flying it myself, not anxious enough to try a winch start though. Ray launched it a few more times and instructed me in some of the basic flight maneuvers. After a few flights the Hawk was disassembled and put back into it's foam case. Ray suggested a few changes that would probably help in balancing the Hawk and make it easier for the beginner to fly.

Because the Hawk is a high performance sailplane, the flight performance is even more impressive than its appearance. It is recommended that the Hawk be flown fast and then, if balanced exactly as the plans show, it becomes a very "sporting" machine. The control response was so fast that I felt uncomfortable with it, so Ray suggested that the controls be toned down. Changing the control rods to a outside hole on the servo arms produced less movement at the control surfaces.

Because I'm a beginner to this sport, a few other small changes were suggested to make the slow speed characteristics more acceptable to my responses. First, additional washout was put into the tips of the wing by twisting the washout into the tip and then heating the area with the shrinking iron until the wrinkles were out of the MonoKote. I put about 3/8 inch difference in leading and trailing edge heights with the leading edge down in relationship to the wing. You can check this by measuring the heights of the edges from the table surface with the wing flat on the surface of the table. Let the washout continue inboard for about ten inches and make sure that both tips are as evenly bent as possible. Others have tried ½-inch differences in height and say that stability has increased at slower speeds. The sharp leading edge of the wing profile makes for low stall characteristics. The stall is drastic when it does occur, but is predictable and can be foreseen.

The second modification suggested was to slightly change the position of the center of gravity. The instruction booklet goes very much into detail on the method of balancing the model and when followed, is quite simple to perform. The modification suggested to me was to increase the weight forward and to check by increasing the vertical measurement from the 19 inches in the instruction book to approximately 21 inches. Those of you who have seen the instructions will know which



The radio installation in the "Hobie Hawk" was easy using the RS2, two channel radio; the servo brick looks like it was made to fit and the flying control rods are already assembled by the Hobie factory.

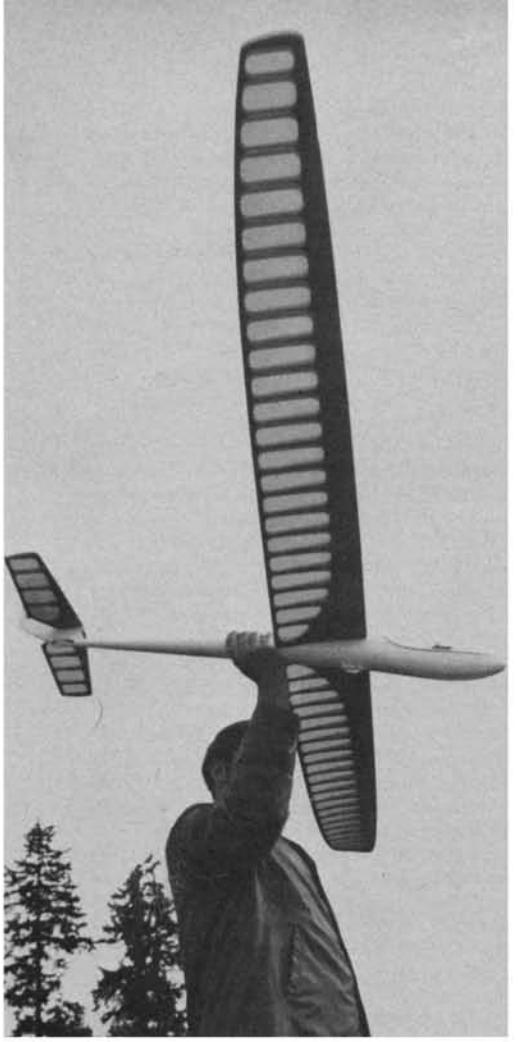


figure I'm talking about. This results in a slower flying sailplane and expands the speed envelope somewhat, making the sailplane easier for the beginner to control. The changes were made and, after another day of test flying, I felt that some progress was being made. At least the Hawk was still in one piece.

Ray then suggested that probably the fastest way to gain flying proficiency would be to participate in some slope soaring. Slope soaring involves the flying in the "rising air" caused by the air moving over the rising slope or due to temperature changes over either warmer or cooler land masses. By soaring off the edge of a ridge, a bluff, or the front of a hill, the flyer is taking advantage of the "hopefully" consistant rising air flow and is able to fly for a longer period of time and without the necessity of having a winch or hi-start. By the way, the World record for this class of flying is in excess of 19 hours.

Launching from a slope can be either accomplished by the flyer or another person but the method used will depend on how trusting you are. The latter will let you concentrate on the launch while the friend is getting the feel of the "lift" that is available. Be careful and check the lift as the launch will depend on how much is available. Launch the model with the nose pointed slightly below the horizon and launch straight into the wind. Beware of launching the model upwards as this usually results in a stall and many times there is not enough room to recover before meeting "mother earth." Once launched, move out away from the hill and check the trim of the model. Remember to keep the nose down as the wing incidence in relationship to the body is such that, for the wing to be flying the nose must be down. Nose up and you are into a stall faster than you can say "Hobie Hawk." Try some turns but remember to turn away from the hill at first until you become familiar with the movement of air over that particular slope. Remember that, when going downwind you must anticipate your turns as the air flow will carry you past your normal turn point. Also, downwind turns will require an increase in airspeed to initiate the turn without stalling out in it. You accomplish this by slightly dropping the nose of the sailplane. In this area only practice will bring flying proficiency.

Because there is no room for error, the landing becomes the hardest part of soaring to get right. The landings, or in my case the "crunches," really tested the durability of the Hawk. The first landings were hardest because I tried to stretch the landing glide out without enough flying speed and I could have sworn that the ground actually leaped up to snatch my plane from the air but my friendly observers reassured me that that was not the case. Be sure to ask for help in determining the correct landing procedure for the particular slope you are flying on, as others before you have learned from experience the proper way to fly your landing approach. Figure eights and loops will follow and the fun of slope soaring will really begin to expand your soaring activities.

Looking back on my learning process, I feel that if you take the time to get good instruction and are diligent in your practice sessions, the rewards of soaring can be ever expanding both as an art or skill and as a relaxing pastime. I found that the Hobie Hawk has many positive points that make it an excellent beginner sailplane. One is that it is an extremely rugged sailplane, mine has flown through the branches of some fir trees without a scratch and some of the first landings really tested the durability of the fuselage. Secondly, damaged parts can be replaced. A price list is enclosed with the kit and from other flyers experiences, the response on replacement parts is excellent in view of the time involved in getting mail through the system at the present time.

Another positive aspect is that the kit comes either as a ready to fly model complete with radio now, as a ready to fly model with the installation of the radio left to the modeler, or as a semi-kit to be finished by the modeler. Additional sets of wings are to be made available and these will make the model competitive in various weather conditions or for other soaring activities.

If I had to look at any negative aspect of the Hobie Hawk, I would have to say that it would have to be its performance. It is somewhat hot for the beginner but, as I found out, if you set the sailplane up somewhat "toned down" to start with, you will find it to be a positive experience.

It makes you learn the art of soaring and as far as I'm concerned, that was what I had started out to accomplish. I have a long way to go to get to be as proficient as my instructors but in the meantime I'll be having a heck of a time learning.

After flying and adapting yourself to the flight characteristics of the Hobie Hawk, I'm sure that one will have the proficiency to fly just about anything around but so far I can't find anything else that I enjoy flying more than the Hobie Hawk.

Ray Blatt is Jerry Julian's friendly and tolerant instructor in matters pertaining to sailplanes in general and "Hobie Hawks" in particular. Ray has been flying this airplane for a long time and recommends that anyone who is thinking of building and flying get an experienced instructor.