

Charles Schobloher

Hiperbibe

050



This "wild" looking cabin biplane enjoys an enviable reputation for its aerobatic ability, has been flown as an RC model to second place in the Scale W.C.'s by Bob Underwood and appears here as a Nationals winning Half-A powered free flight.

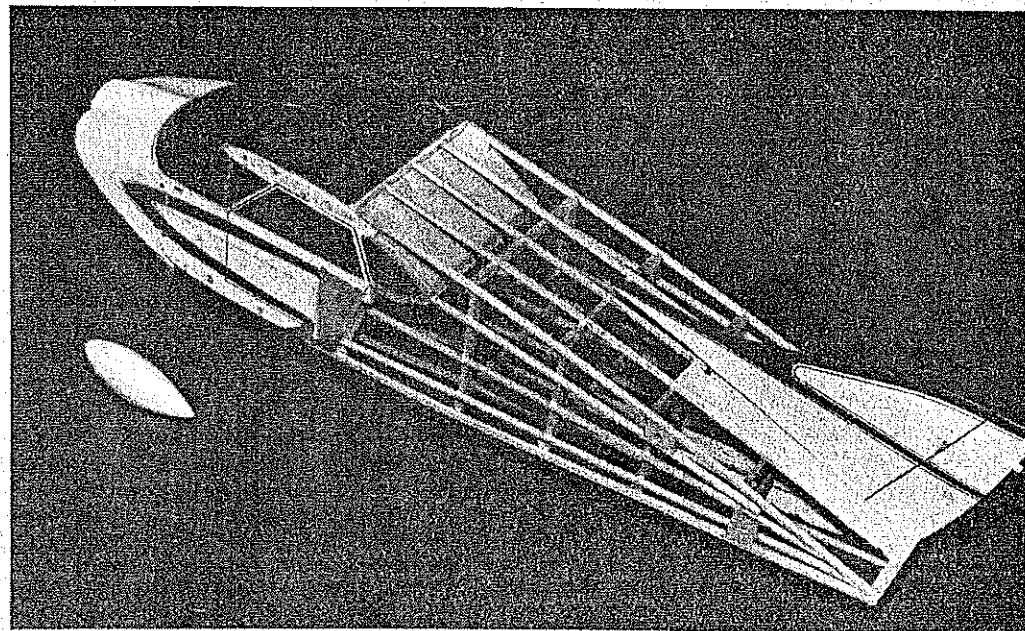
Not only is the racy looking bipe "different" but observers comment that it looks different from every angle you view it—its personality seems to change before your eyes.

Hiperbibe demonstrating its acrobatic ability, and by the use of smoke, its very streamlined low turbulence fuselage configuration. The author comments on the

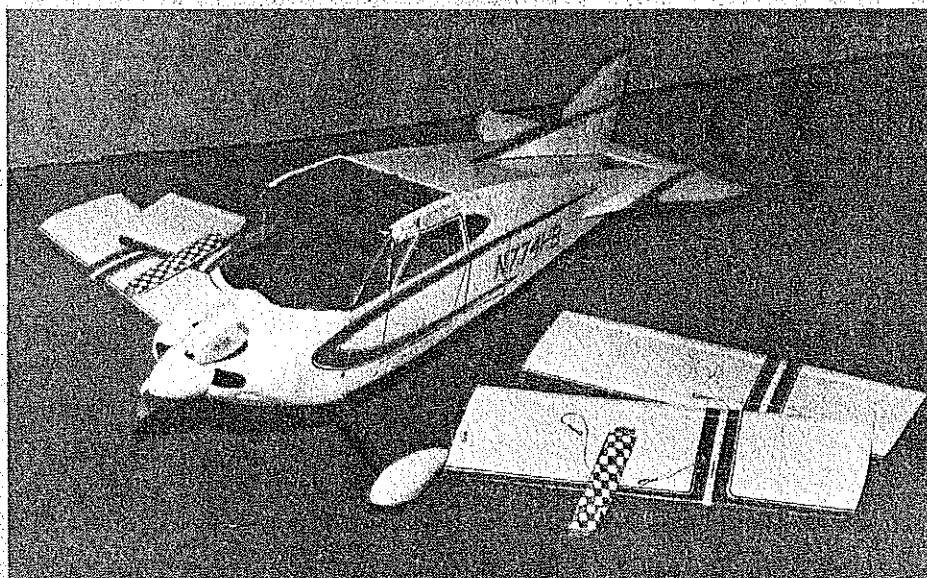
fact that as you view the Hiperbipe from many different angles, it presents a different impression in each picture from a fat and square to slick and streamline appear-

MY FAVORITE airplanes seem to be homebuilts, or one-of-a-kind designs exhibiting strange shapes. When I first saw pictures of the "Sorrell Hiperbipe," a very unusual fuselage shape, two sets of wings (if one is good, two is better) I knew I had to build one. As usual, however, I am slow to get started and one of the members of our Club (The Cloudbuster M.A.C.) built an indoor Peanut version, which exhibited a very stable flight. Now I knew I had to build a model of this wild bird. (Editor: Since this was written Bob Underwood placed second in the RC World Championships with a Hiperbipe.)

I purchased an issue of *Sport Flying Magazine* and learned that this particular plane was the seventh in a series of biplanes spanning ten years of development that the Sorrell family, father and three sons, of Olympia, Washington, had built. The SNS-7 stands for Sorrell-Negative-Stagger Seventh in their line of biplanes. The magazine contains many fine black-and-white and color photographs of the



This structural view of the uncovered fuselage will help clarify the details of the plug-in wing feature—knock-off wings are a nice thing to have on any powered free flight scale configuration.



A unique and attractive feature of the model is a concealed rubber band and pulley arrangement hidden within the lower wing, which allows the lower wing to flex downward upon landing. The rubber keeps the rigging wires under tension at all times, and preserves outward realism.

ance, and that its uniqueness grows on you. It is truly a very unusual airplane. The magazine also includes a 3-view that I used in drawing up the plans for the model.

As I studied the 3-views and photographs, it appeared that the most difficult area would be the cowling since it flows right into the cockpit area, and, of course, the inherent weakness in a fully opened greenhouse for structural considerations. A gas model of this type with so much window area and requiring a full cabin interior leaves little room for structural lumber. I decided upon a scale that would just fit a Cox Tee Dee .020. This required some form of plastic or epoxy type cowling that would not create a scale that was so large as to be difficult to grasp with one hand for hand launching. As it was, the width (3 3/4 in.) of the fuselage was quite large, about the limit. I decided to use thin plywood around the cabin area, and the plans were drawn up.

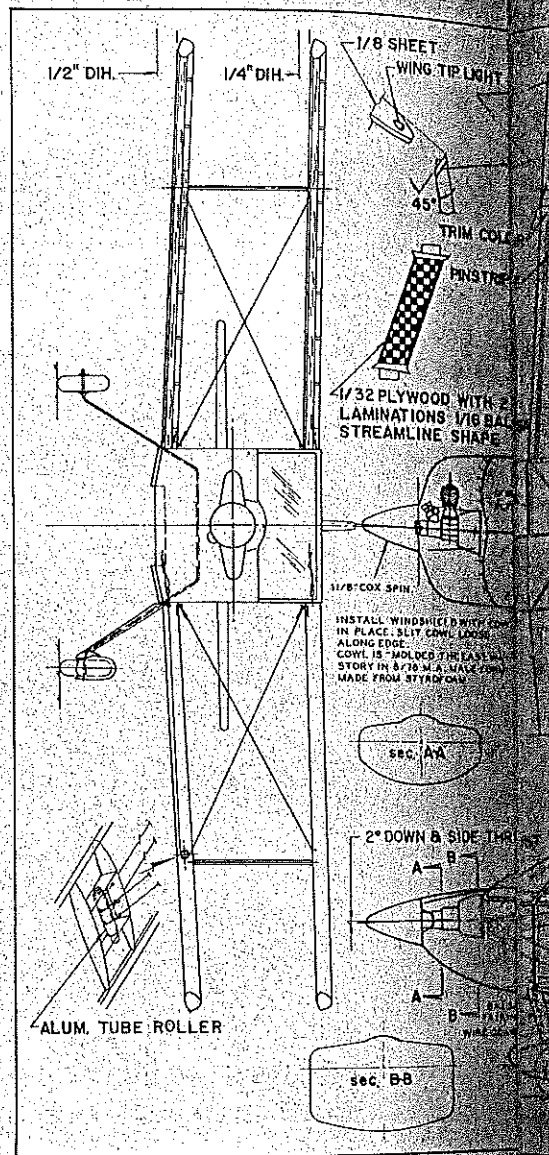
One other problem area still existed, however. That was how to secure the wings on and still make them "knock-off" for the inevitable crashes that I could foresee for this model, while getting it trimmed out. I wanted to use a system that I had employed on a rubber model of the Beechcraft stagger wing that I had previously built, but the method had been severely criticized by fellow club members, because of the exposed rubber bands utilized on the flying wires. A system of pulleys was developed and breadboarded, whereby the rubber bands used to hold the lower wing attached, put tension on the flying wires, and through the wing struts, imparts and upward force against the top wing, making both wings shockproof and leaving no exposed rubber bands. The rest of the plane, except for the necessary adjustable stab and rudder, was of conventional construction. I might also mention that working overtime does not leave much time for building, so I used Hot Stuff glue almost

exclusively for construction and found it a truly "crazy glue" considerably speeding up building time, and I highly recommend it to those who haven't tried it before.

Fuselage: Begin by building two fuselage sides directly over the plans, making sure one is left hand and one right hand. Do use the hardwood longerons specified on the plans, as I had used balsa, which was too weak to survive a "tug of war" with a card-table out at the local flying field. I have since rebuilt the fuselage with hardwood.

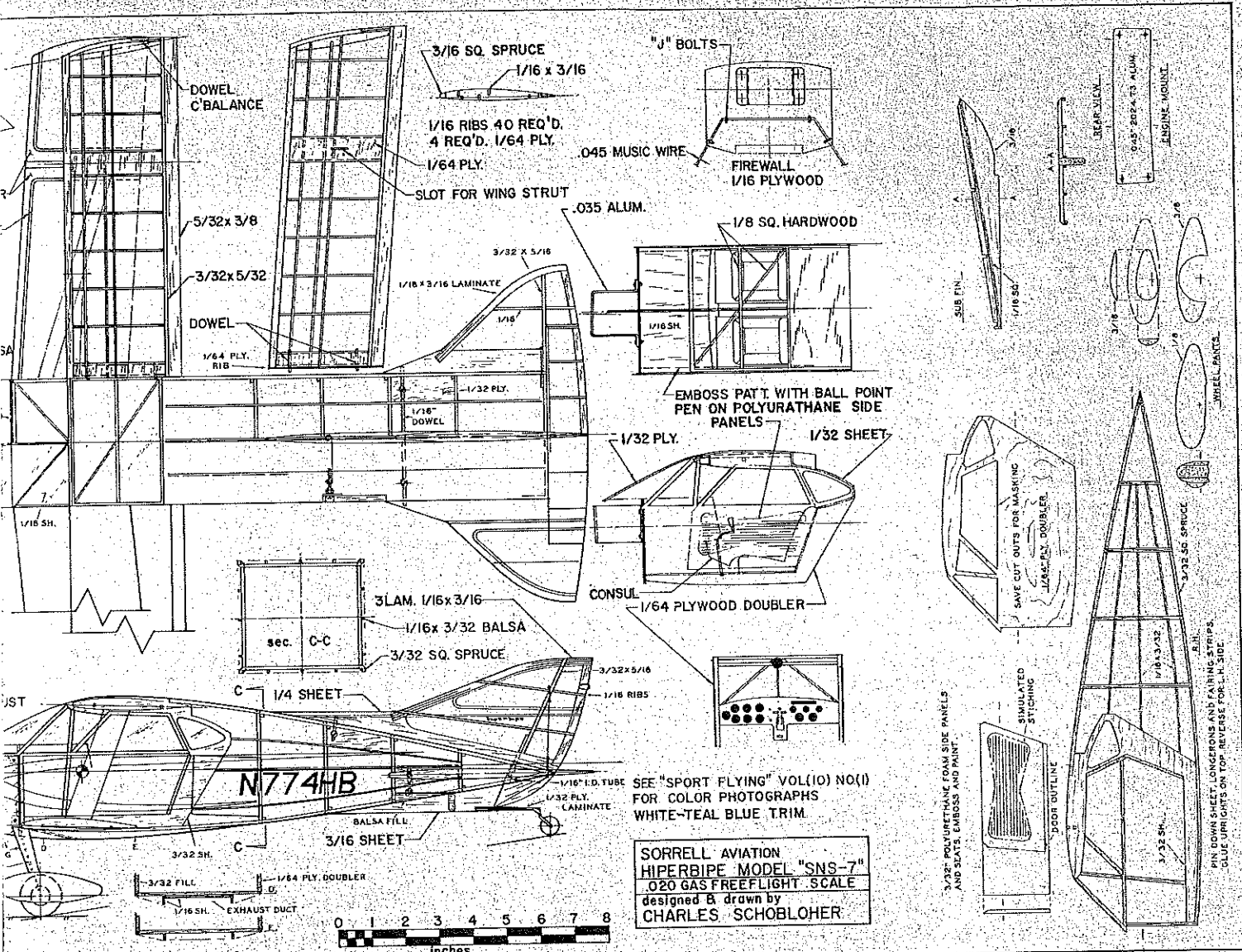
Block up the two sides in a vertical position, cut equal length cross braces and begin glueing to fuselage sides. That is the most enjoyable part of the Hiperbiplane not having to pull the rear of fuselage together at the tail etc., and cutting odd size cross-braces. Put in cabin floor, seat back area, and top rear of cabin with 1/32 sheet balsa. Make cabin sides by cutting polyurethane foam to 1/2-in. thickness, scribe stitching lines and door outline of the foam with a ballpoint pen. After it is painted, the embossments will appear to duplicate the trim detail on the real plane. The balsa instrument panel, with individual instruments cut from magazines, glued to it is covered with celluloid and a wood color-stained piece of thin plywood, with holes punched through with a paper punch positioned to align with the instruments.

The seats and seat backs are made from foam and also embossed with ballpoint pen to represent seams and tucks of the sewn covers. The console and the rest of the details such as engine control mixture sector, and switches, control stick and rudder pedals, can be fabricated from balsa, plastic sheet, aluminum tubing and the ends of straight pins. The crossbraces at the top of the cabin, representing spars, are constructed of hardwood for strength. Don't forget to make the one instrument case that is attached to these upper cabin braces, as shown on the plans. After the interior is



finished and painted, the celluloid is epoxied to the side window area and the canopy also epoxied on. The 1/64 plywood sides are painted around the window area and then epoxied over the celluloid. Keep the plywood window cutouts and use them as masking when spray painting the model. It is a lot easier than trimming to fit masking tape around glass area.

The method I used to make the windshield canopy was to make a balsa wood form, making sure the grain was completely filled with sanding sealer. Make a ring about one-half inch larger in both directions from scrap plywood paneling, that will allow the form block to pass through. Staple a piece of heat forming Sig plastic sheet, .020 or larger thickness, to the plywood frame or ring. Add some sort of handle to the back side of the form block (a large wood screw, for instance). Take the frame with celluloid attached and hold near broiler coil in your kitchen oven. When the plastic begins to smoke (boiling off of the plastizers), remove quickly from the oven and push the form block through the frame. If it cannot be done the first time, reheat as many times as necessary



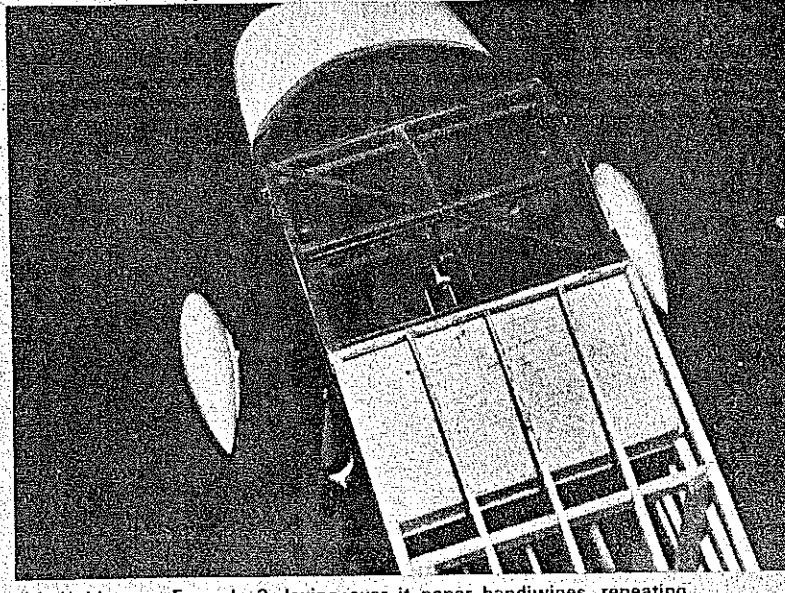
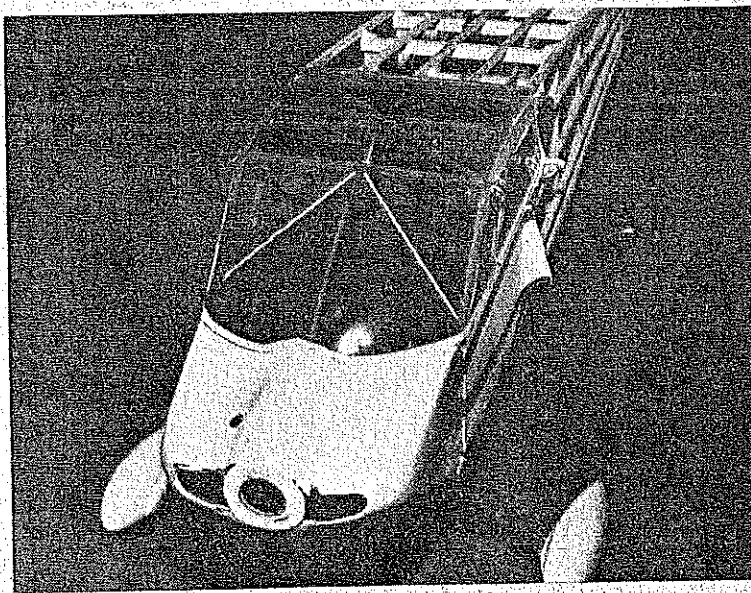
SEE "SPORT FLYING" VOL(10) NO(1) FOR COLOR PHOTOGRAPHS WHITE-TEAL BLUE TRIM

SORRELL AVIATION
HIPERBIPE MODEL "SNS-7"
020 GAS FREEFLIGHT SCALE
 designed & drawn by
CHARLES SCHOBLOHER

until the form can be pushed into the plastic to the depth required. Be careful, however, not to boil off too much plastizer as

the plastic will take on a white milky appearance. Make several canopies, and select the best one for the model.

The engine cowling is made out of a styrofoam block. Three templates are shown
Continued on page 105



Left: The cowl shell is made by shaping a styrofoam block, coating it with Hobbypoxy Formula 2, laying over it paper handiwipes, repeating that process, finishing with epoxy; finally, foam is dissolved with gasoline—full details in text. Right: Windshield is formed by making balsa form, over which plastic sheet attached to a plywood ring and heated to softness is molded by pressing the block through ring.

apologize if I have neglected any new data or engines, if so it was not intentional. I did neglect carburetors and mufflers, since such should be covered in a separate, complete article.

Winged World/Bowers

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barnstorming. During those "golden age" years he flew in air races (the Howard Pete), made home-built aircraft, and rebuilt "bought airplanes," such as his Waco 10. During these operations he meticulously photographed, plumbed, measured, and recorded all structural details and now maintains this data in his reference files. He flew for the old Northwest Airways, using Laird Speedwings, and was a friend of "Speed" Holman. In Canada, he "bush flew" Bellanca into the most remote areas of the Northwest Territories.

On one such trip Ned tells of picking up a load of mining tools, several dogs, and a pregnant Eskimo woman. Enroute he was encountering moderate turbulence when suddenly his "attention was grabbed" by a loud crack, followed by a ripping noise. "You never felt so much cold air." The dogs started barking, the expectant mother began to have pains, and amid all the excitement Ned's assessment of the damages determined that the Bellanca's fuselage fabric had torn away from just behind the wing almost back to the fin and was "flapping in the breeze." He was able to maintain flight to the next mining station where he landed for relief and repairs. If you ever run into an Eskimo named Bellanca you can guess where he came from.

Kragness continued to work for the airlines, including the old Transcontinental and Western, later TWA, leaving them for a special assignment which took him into pre-war Nazi Germany, and throughout South America. During this period he was able to fly many foreign aircraft, whose names were soon to become household words. Just prior to World War II he was called to active duty with the Army Air Corps (he held a reserve commission in the Coast Artillery) and his first military flying began when the operations officer, after looking at his log book, pointed to a North American O-47 on the field and told him to go out and brush up a bit on it.

From then on, his military flying took him to Panama where he flew all the "odd balls," combat tours in P-40s and B-24s in the Pacific, and later to Muroc Dry Lake and into test flying and engineering. Just before the war ended, many captured enemy aircraft were brought to Wright Field for flight evaluation and engineering studies in which Kragness was deeply involved. He laughs when he recalls an incident on the ramp at Wright Field when a captured JU 88 was flown in from Africa. All the brass came out to inspect the new prize and were milling around the plane, under the wings, kicking the tires, and do-

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ing what pilots do when they see a new machine. One Major got into the cockpit and began examining the switches on the armament panel.

"I guess he couldn't read German," Ned recalls, "for soon there was a loud bang and all hell broke loose." The Major had thrown a switch which detonated several explosive bolts under the wing that were part of an emergency system used to rid the plane of certain external armament loads. Bits and pieces of shrapnel "peppering hell out of all the brass under the wing." All the injured were awarded the Purple Heart.

After the war, Kragness left the service and joined the CAA (later the FAA), where he held many positions of responsibility in engineering and research, and in aviation law. But the lure of the cockpit became too strong. He returned to industry and more active flying as an engineering test pilot with Hayes Aircraft, and later with Lockheed.

During these years Kragness owned several airplanes, his all-time favorite an old, surplus Vultee "Vibrator" (BT-13) which he flew for fun for seven years. This is a remarkable choice for a pilot who has flown several hundred types, ranging from the Curtiss flying boat and Spads, to Howard racers and Lockheed Vegas, to P-38's and FW 190's, to Constellations and JU 52's, and to modern day jets.

Kragness went back to Government in 1959. Although his day to day responsibilities do not include active flying, he manages to remain proficient in two or three different aircraft types. He is flying a Beech Sierra and most of the Cessna models. But Kragness still manages to spend many hours in his shop and is producing beautiful models, the quality of which seem to improve with each one that he builds.

We often think of the active modeler as an individual who spends every spare moment, amid much ballyhoo, at the flying field. The quality of his model, and whether or not he built it himself, may be of no real concern to him or his admirers. Significant only is how many rolls he can get on a fast fly-past with a super "Macho X." But there are many highly active modelers whose needs for expression are satisfied through creativity. Such as producing a replica of an aircraft which has some special esthetic or nostalgic appeal. Kragness is one of them.

For example, the BT-13 which he owned has been the subject of many models, each an improvement over its predecessor. As a true innovator Kragness has developed remarkable techniques for constructing mon-

ocoque fuselages, and has applied them to the "BT." He has developed another of his clever control systems for this model, completely enclosed in the tail cone—sheer genius. These models have flown FF and RC with considerable success and the techniques are being applied to other subjects. Several of these techniques have been the subject of magazine articles.

In recognition of Kragness' many varied activities have come frequent requests for his services as a consultant. From time to time he has represented the Department of Justice, insurance firms, and several large legal firms on litigation regarding aircraft accidents.

For Kragness, retirement has no allure. It will be a progression into another career. What are his plans for the future?

"Well," Ned says with a big grin, "I think I'll just do what my neighbor's neutered tomcat, Sam, does: continue consulting."

"There are also many other things that I want to do," he goes on, "such as writing about aviation and model planes, and instructing flying in Beech's and Cessna's at the local airport." He plans to pursue his other hobbies of photography, music, and the use of his wonderful collection of machine tools.

"Will this provide satisfaction after so many active years in aviation?" I asked him.

"No," he replied, "but there sure are a hell of a lot of models I want to build."

Hiperbipe/Schobloher

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on the plans to help shape the styrofoam block. Do the carving or shaping with a sandpaper block. Sand only in one direction to prevent "chunking out" of the styrofoam. The proper type of styrofoam is the expanded-bead polystyrene type, because it is readily dissolvable in aromatic fluids. Paint on the foam form a coat of Hobbyoxy formula #2. When the epoxy becomes tacky, lay a number of pieces of paper handiwipes (cloth-like paper toweling) over the coated form block. Add another coat of Hobbyoxy, then another layer of toweling, and a final coat of epoxy. When dry, sand down the epoxy until it is smooth. If there are holes or the paper toweling comes through add as many coats of epoxy as necessary to obtain a smooth cowling.

This is the best time to prime and finish spray painting the cowling. When dry and completely satisfied with the finish on the cowling, pour gasoline inside. The gasoline will dissolve the foam, leaving a fin-

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ished shell of epoxy paper laminate. It is an easy way of making a thin cowling and can be easily redone in the event of a major crack-up. (See article "Mold It The Easy Way", July 1977, *Model Aviation*.) Trim the cowling to fit around windshield canopy and attach with small wood screws through the cowling into hardwood blocks cemented to the firewall along the sides, and recessed for the thickness of the cowling.

Wings: They are made in a quite conventional manner, but do use the hardwood leading edge called for. It prevents nicks when the model lands in tall dry weeds. The root ribs, top and bottom area where struts attach, are planked with 1/64 plywood (sold mostly as wing skins for use on foam RC models). The lower sweptback wings contain the pulley arrangement that allows the wings to flex downward upon landing. The pulley is simply two pieces of telescoping aluminum tubing, one cemented into gussets, the other rotating freely over the first. This pulley arrangement will keep all rubber bands hidden in the wing and still apply tension, keeping flying wires taut.

The wing-tip lights are made from round dowels, tapered and sanded to a streamlined shape. The blunt end is painted red on one, and green on the other. Mix a small portion of 5-minute Hobbypoxy and lay a drop over the red or green end, just sufficient to cover entire diameter. Now hold

tip light in a vertical position, epoxy edge down, and the Hobbypoxy will sag to a streamline shape and be crystal clear when hardened, making a clear lens cover. Cut slots into the plywood for the knock-off wing struts. One-sixteenth hardwood dowels are used to pin the wings to the fuselage, and only extend through fuselage sheet thickness, to permit knock-off characteristics.

Tail Surfaces: The stabilizer and rudder curved leading edge pieces are made of water-soaked balsa strips taped to a form until dry. After assembly, the laminated leading edges and the ribs are sanded down to a streamlined section.

It is important to make the stab and rudder adjustable on a scale model. My method is to use a small number 2-56 machine screw for the adjusters with the head of the screw and a soldered-on washer or nut sandwiched on both sides of a plywood plate. An additional nut with a wire loop soldered to retain a hardwood dowel that can now travel up and down, permits adjustment of the stab or rudder. The extreme fuselage width required making two screw adjusters for the stab.

The stab hinges on two straight pins put through the rear of the fuselage. Cover and completely trim the stab and the three sides of fuselage before assembling. The pins are pushed through the fuselage into the stab, and the dowels added at the front through the adjuster screws. After assem-

bly seems correct, complete covering the bottom of the fuselage. The rudder is similar but pivots on a hardwood dowel that telescopes into a previously attached aluminum tubing in the fuselage. The bracing wires between stab and rudder hold the whole assembly together.

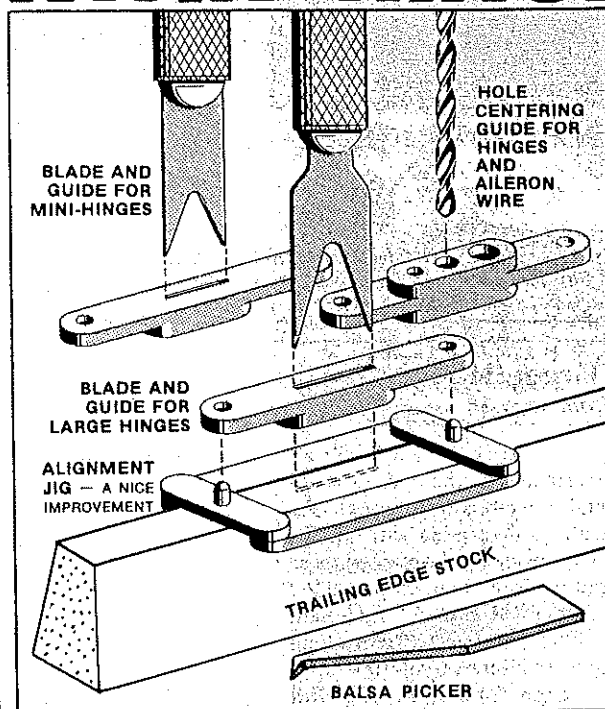
Flying: Before you attempt to fly the model I would like to make one very important suggestion: The Cox Tee Dee .020 with its integral gas tank will run almost three minutes on a full tank with a large 5 1/2 x 3 prop. I had it all figured out that by tipping the plane approximately 120 degrees from horizontal I could only put in about one third of a tank full with a squeeze bulb. However, at the 1976 Nationals I must have eventually filled the tank, after two attempts to takeoff, and consequently had a fly-away and lost the airplane. Two weeks later, through the generous efforts of local model clubs, I did retrieve the model. I now fly with the tank filled two-thirds with a rubbery plug made from Selastic (Dow Cornings bath-tub caulk). It is impervious to fuel and doesn't stick to the tank. It can be removed and carved down to a dimension that will permit any engine run you desire. In the heat of a contest it is now impossible to over-fill the tank.

The model, in spite of the fly-away at the Nationals, and not qualifying for any landing approach points, did win a third place and the E.A.A. award for best home-built free flight, gas category. After the previous

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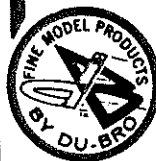
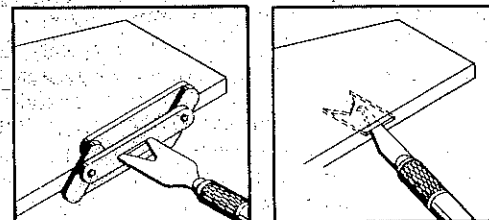
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mentioned crack-up with a cardtable at a local contest this model was rebuilt and took first place at the 1977 Canadian Nationals, demonstrating a smooth take-off and, like any other biplane, a very stable flight pattern.

I hope that you also will build this model and enjoy flying it as much as I have. I would like to hear from you.

FF Duration

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These are the aspect ratio, the curvature of the airfoil section, and the thickness of the airfoil section of the wing." Or this could be restated that wing layout and airfoil, which is what Table I essentially documents, are the real secrets of glider performance. At any rate, Table I may be used as an Interim Great And Wonderful Nordic Design Oracle & State-Of-The-Art Determiner until the next design trend comes along.

Speaking of Which: Speaking of the state-of-the-"art" in Nordics, District V Vice-President Jim McNeill has some as arty as any. In fact, Jim has a zoological assortment of decorative tails—chickens, hippos, etc. (see photo, also noting the bamboo tail boom). Jim enjoys his flying and this is reflected in his artful approach to tails. And if the chicken doesn't work out Jim can always change to an eagle or condor for more performance. Or a peacock.

NFFS Nounement: The National Free Flight Society gears are already in motion to get the proverbial act together for 79. One of the most looked-forward-to efforts of the Society is the annual (12th annual this year) NFFS Symposium. The National Free Flight Society is now soliciting papers for the 1979 NFFS Symposium to be held at the 1979 Nats. Papers will be published in the 1979 Symposium volume, whether or not the author is able to present his paper personally at the Nats. Papers should cover some aspect of science or art of free flight models, including technical studies, practical design and engineering as applied to models, new or unusual model aircraft developments, or historical items. Both indoor and outdoor free-flight modeling developments are to be included. Please send proposed papers to Mr. Robert P. Dodds, Box 436, Rancho Santa Fe, CA 92067. Send title of proposed paper together with an abstract of 200 words or more, or a complete paper if it is available. Abstracts should be submitted as soon as possible.

NFFS Nounement No. 2: Another of the Society's annual efforts is also associated with the Nats—sponsoring/conducting the Nats Unofficial Events (and you thought that 7-Up was responsible).

Although the Unofficial Events program has become somewhat traditional at the Nats, planning and/or announcement of some of the events in the past have some-

times been late, loose, or non-existent. Terry Rimert, the NFFS 1979 Nats Unofficial Events Director volunteer, is attempting to prevent past mistakes by, as Terry puts it, "trying to get some events lined up in time to let people know we are going to have them so they can prepare for them. I'm looking for people to sponsor events and people to run the events at the Nats. The sooner we find out what we can do the better. So far, John Pond has told me he is going to have Old Time FF on Friday and the Old Time Banquet on Friday night.

"I will try to schedule NFFS events to not conflict with this. Rubber Speed will again offer a prize of a buck per mph to the winner. Tentatively, Rubber Speed will be on Tuesday. All we need is someone to sponsor/run Helicopter, Autogyro, Ornithopter, Jumbo Scale, Thompson Trophy Races, Embryo Endurance, ROW, P-30, Cargo, and a few others."

Volunteers interested in aiding Terry as an event sponsor, event director, event worker, or whatever, contact him at 367 Orange Avenue, Baldwin, FL 32234. If you can't be a helper at least consider flying the events. While "Unofficial," some are really neat, challenging, unique, fun, and even "official."

North By Northwest: It definitely is no fun to lose an airplane or wander around aimlessly in the woods looking for one. A compass could be an excellent aid in searching