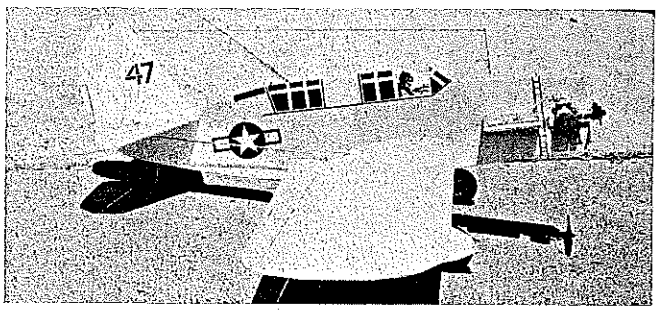
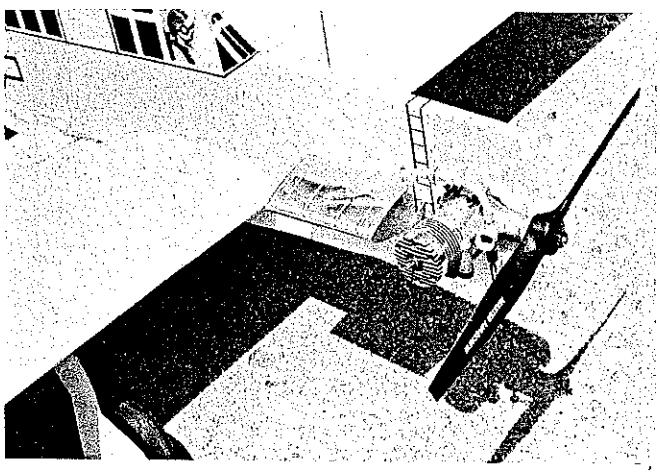
Who can resist an open cockpit with the pilot waiting for his chance to take off? The light gray upper surfaces and white undersides make for a very subtle and appealing color scheme. All the insignia were cut from plastic film and pressed in place. Ground clearance is more than adequate in the Helldiver. Takeoffs and landings in the grass are easy and uneventful. Details like the antenna help to spruce up the airplane. 634

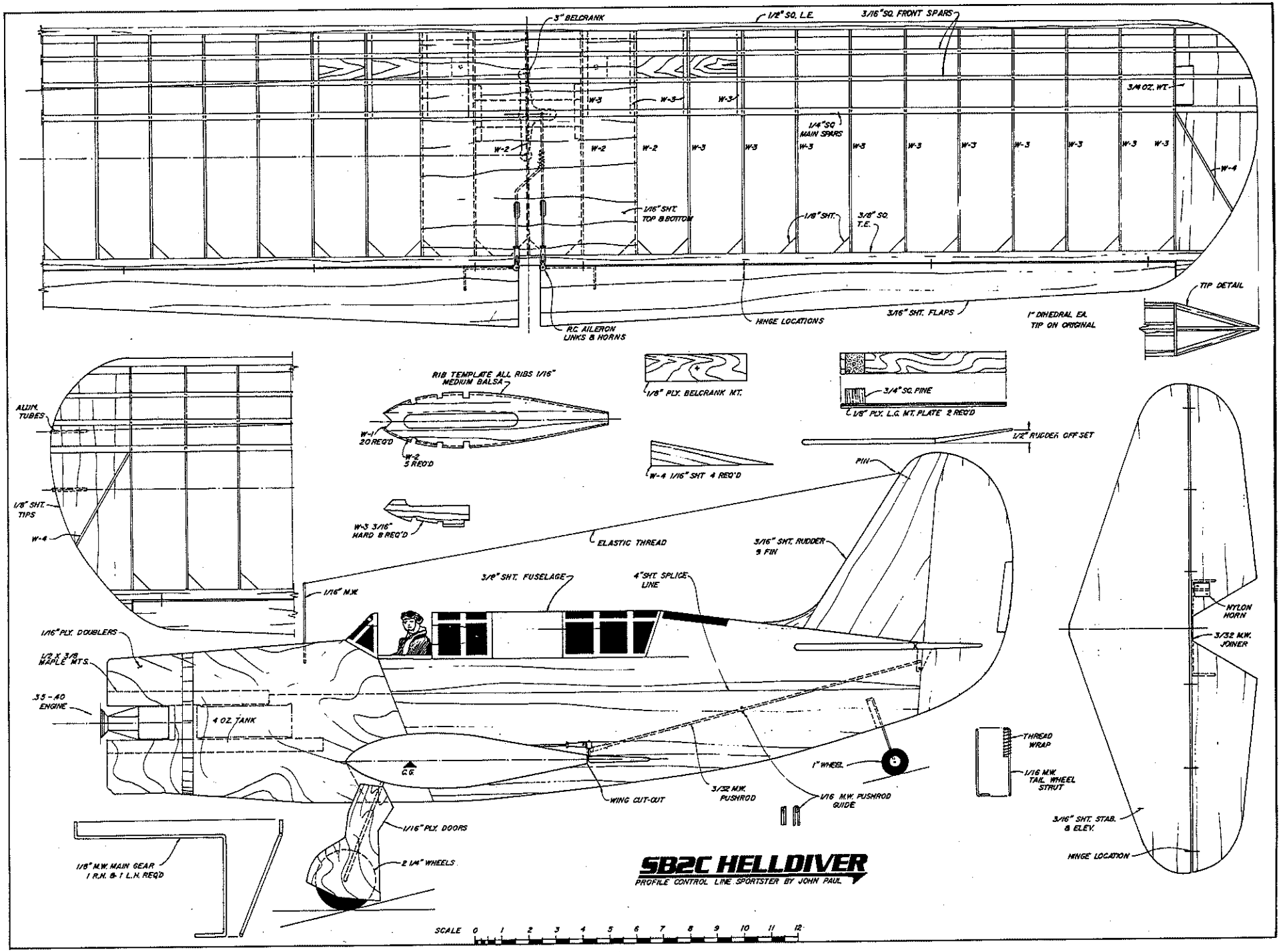
This CL profile sportster handily meets the criteria for a realistic-looking, simply crafted model that is highly manueverable. It is quite suitable for a first scratch-built project. ■John Paul

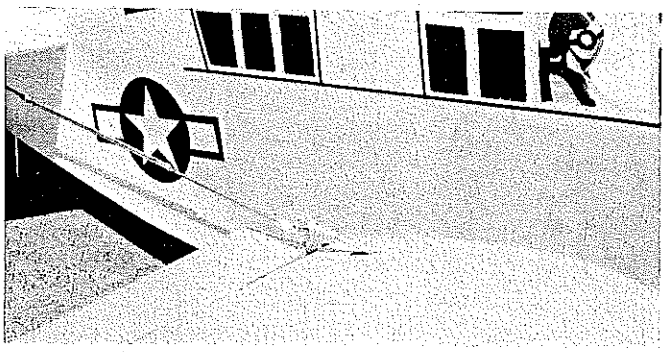
SB2C Helldiver

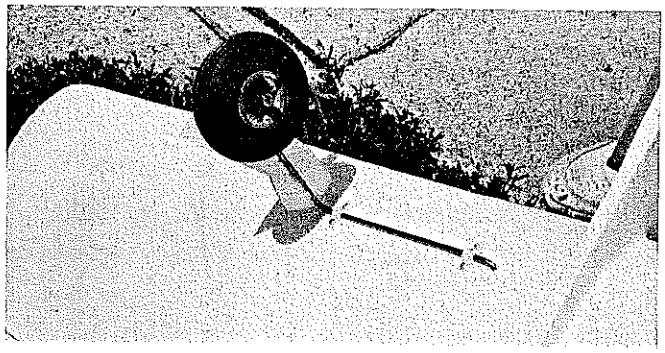




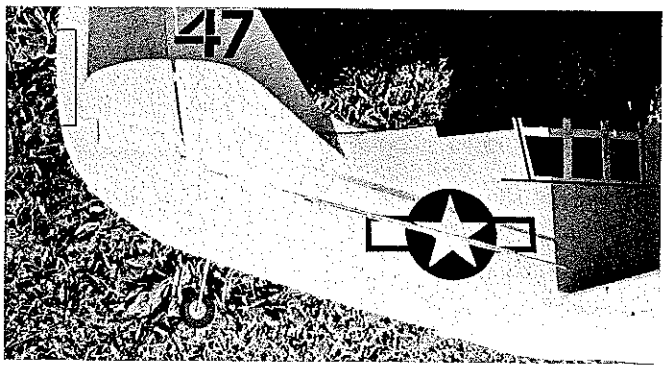
Above: The business side of the Helldiver. The model has ample area in every direction. The engine, tank, and pushrods almost get lost in the expanse. Natural moments make the Helldiver an ideal design to translate into scale dimensions. Right: The engine and tank installed and ready for another torpedo run. It's an O.S. .35 and is quite sufficient for powering it through all the maneuvers. Don't forget to install the inline fuel filter to ensure many trouble-free flights.

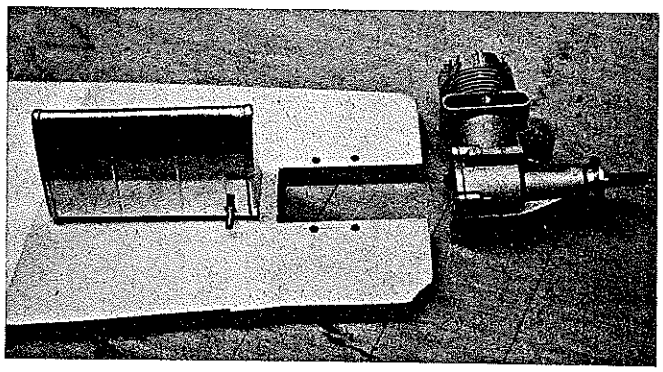

3" BELCRANK
1/2" SQ. L.E.
3/16" SQ. FRONT SPARS
3/4 OZ. WT.
1/4" SQ MAIN SPARS
W-1
W-2
W-3
W-4
1/16" SHT. TOP & BOTTOM
1/8" SHT.
3/8" SQ. T.E.
R.C. AILERON LINKS & HORNS
HINGE LOCATIONS
3/16" SHT. FLAPS
1° DIHEDRAL EA. TIP ON ORIGINAL
TIP DETAIL
RIB TEMPLATE ALL RIBS 1/16" MEDIUM BALSA
W-1 20 REQ'D
W-2 5 REQ'D
1/8" PLY. BELCRANK MT.
3/4" SQ. PINE
1/8" PLY. L.G. MT. PLATE 2 REQ'D
1/2" RUDDER OFF SET
W-4 1/16" SHT. 4 REQ'D
W-3 3/16" HARD 8 REQ'D
ALUM. TUBES
1/8" SHT. TIPS
PIN
ELASTIC THREAD
3/16" SHT. RUDDER & FIN
3/8" SHT. FUSELAGE
4" SHT. SPLICE LINE
1/16" M.W.
1/16" PLY. DOUBLERS
1/2 X 3/8 MAPLE MTS.
.35 - .40 ENGINE
4 OZ. TANK
C.G.
WING CUT-OUT
3/32 M.W. PUSHROD
1/16 M.W. PUSHROD GUIDE
1" WHEEL
THREAD WRAP
1/16 M.W. TAIL WHEEL STRUT
1/16" PLY. DOORS
2 1/4" WHEELS
1/8" M.W. MAIN GEAR 1 R.H. & 1 L.H. REQ'D
NYLON HORN
3/32 M.W. JOINER
3/16" SHT. STAB. & ELEV.
HINGE LOCATION
SCALE 0 1 2 3 4 5 6 7 8 9 10 11 12
SB2C HELLDIVER
PROFILE CONTROL LINE SPORTSTER BY JOHN PAUL



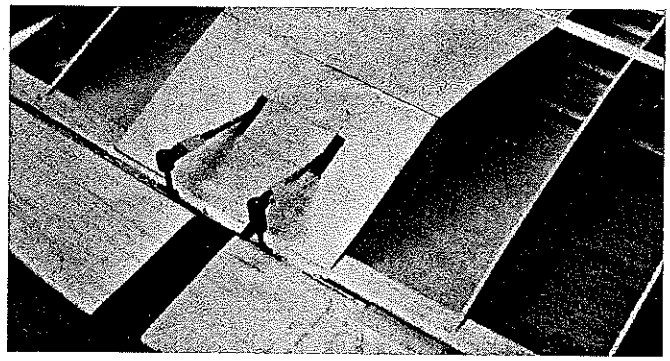


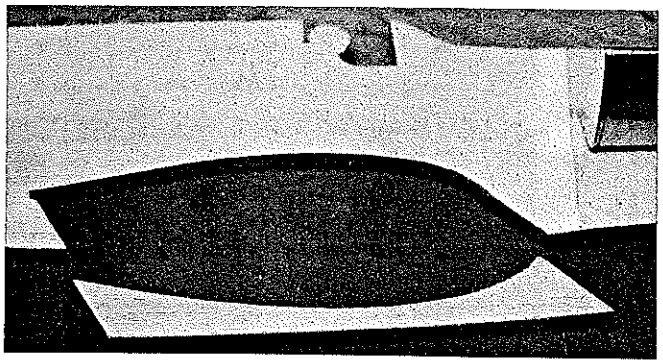
Left: The flap-elevator interlink mechanism. It's very simple and functional. The trim tape outlines add a lot to the finished appearance of the model. Right: The torsion-bar-style landing gear is flexible, rugged, and trouble-free. By using nylon brackets over the wire, the mounting block can be a simple plywood plate without troublesome grooves. The landing gear doors are plywood sheet glued directly to the wire struts.





Left: Lapping the pushrod as shown helps to eliminate any bowing tendency under flight loads. Carrier-based aircraft had small hard rubber tail wheels with a square tread for better deck handling. Right: Lining up the fuel tank directly on the centerline of the engine is crucial for maintaining the same engine run whether upright or inverted. Fuel tank can be fastened directly to the plywood with silicone glue prior to doping.



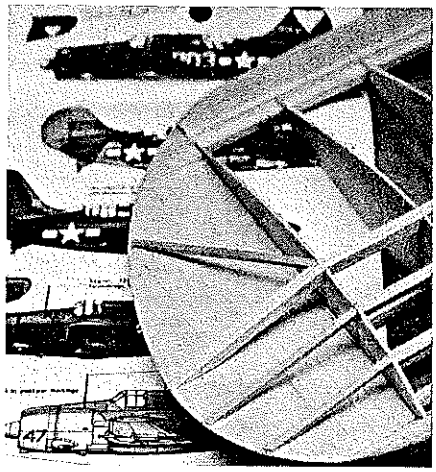


Left: The flap pushrods are made up from RC clevis links. Two are required if you build the Helldiver with dihedral. Notice that the flap horn on the right has two clevis fittings. The second clevis drives the elevator pushrod. RC aileron hardware is used for the flap horns. Right: Cutting out a section of the fuselage allows the wing to be fitted easily. After the wing is in place, the bottom section is reinstalled and epoxied.

MY GOAL for this project was a good-looking Scale profile model that would fly aerobatics. I wanted not only a rugged plane for weekend practice, but distinctive looks with lots of character.

A look at the Navy carrier-based airplanes as potential subjects turned up the SB2C Helldiver. Probably the least modeled of all the Navy carriers, this aircraft has a great deal going for it. The plane has a long nose, ample wing area, a decent tail moment, and a generous amount of side area, not to mention a rudder like a 747's. But the fantastic color profiles in a Squadron Publications book on the Helldiver (part of that publisher's "In Action" series) were what really clinched my decision. With canopy open and pilot gazing back from the paper, the SB2C begged to be built—and I obliged the smiling pilot.

Construction. Its use of standard construction techniques makes the SB2C an ideal first-time scratch-built project. Some modelers may recognize the Dick Mathis-style wing construction. I've used this multispar wing design for years. It's very light, fast-building, and strong.



Keeping the model light is important. The wing tip structure seen here is simply made by extending the spars to meet the wing tip sheeting. Under the wing tip is the documentation drawings that inspired this project.

As shown in the plan, I've built the wings with dihedral. While the dihedral may be omitted to simplify construction, I'm partial to it for aesthetic reasons. Adding even a small amount of dihedral invariably improves the wings' appearance. If you do decide to build in the dihedral rather than leaving the wing flat, you'll need to use the flap linkages as indicated in the plan.

Fuselage. Building techniques are quite conventional, with the only tricky part being edge-joining the fuselage sheeting. Use two sheets of ⅜-in. balsa joined edge to edge. The key is finding two sheets that fit well together in the first place, then sanding or

trimming them to fit without any gaps. I used cyanoacrylate glue (CyA) to join the sheets since it's fast-acting and quite strong.

Use white glue around the nose area to achieve a good bond. If you don't want a pilot in the cockpit, don't cut the figure out of the blank.

Tail surfaces. Choose medium-light sheeting which is nice and flat. Here again, you'll need to splice together two sheets for adequate width.

Wing. Since all but the center section ribs are identical, I stack sawed the rib blanks using a band saw, then drilled the lead-out holes and cut in the spar notches. Follow the same procedure for the landing gear false ribs.

Assemble the wing in the air before gluing. Position the main spars and the leading and trailing edges over the plan to mark the rib locations. Slide the lower main spar ribs in place. Fit the top spar and the top and bottom turbulator spars into the rib notches. The leading and trailing edges may be pinned on. When the assembly appears to be correctly aligned, secure it by slipping large rubberbands chordwise over the wings.

Brush white glue on all sides of every joint. Check the wing for warps or bends while the glue is drying. Pin the wing to the workbench, and prop up the trailing edge with blocks.

Once the glue has set, add the tips, tip weight, lead-out guide tubes, bellcrank and mount, landing gear plates and false ribs, gussets, pushrods, and planking. If you chose to put in the dihedral, add dihedral braces to all the spars, as well as a 2-in.-wide band of lightweight glass cloth over the center joint of the wing after it is planked.

Install the flaps using nylon or pin-style hinges. Those who have no experience in building a flapped model may want to do without working flaps and simply glue the flaps in place.

Make the wing mounting cutout in the fuselage bottom as shown in the plan. Mount the wing to the fuselage, taking the time to ensure good alignment. Assemble the tail, again carefully checking alignment. A slow-drying white glue or epoxy produces strong joints.

Elevator, control horns, pushrods, and clevis. The control system requires pushrod linkage. I prefer to use two long RC-style clevis rods, one originating from the elevator horn and the other from the flap horn. Allowing the rods to overlap a good 4 in., then wrapping and soldering them together, produces a pushrod that won't easily bend under compression. Alternatively, use the pushrod guide as shown on the plan—the traditional method of keeping the pushrod rigid. Install the tail wheel and strut.

Final assembly. I've recently become par-

Continued on page 184

flew an almost unbelievable 17:03. While the flight did not quite measure up to Andy's current national record of 18:07, it was nonetheless impressive to watch. Both Scott Robbins and Dwight Larks also put up respectable flights to garner second and third places. Not surprisingly, Don Slusarczyk won Senior with 14:49, this time challenged by Dave Warren.

The closest contest occurred in Open Easy B where fliers stacked up times like cordwood. Ultimately, Stan Chilton posted 23:43, an apparent new national record, just barely edging Jack McGillivray (who had 23:39) out of first place. Interestingly enough, Chilton was using his much-flown Honey B, while McGillivray recorded his time with a brand-new airplane just out of the box. Earl Hoffman was third at 22:45.

Intermediate Stick saw Dwight Larks and Don Slusarczyk winning Junior and Senior. Open, however, had a new name at the top of the heap. Clarence Mather turned 26:00 on his first flight and just kept getting better, finally posting a winner at 27:19. Dan Belieff did his darndest to break 27 minutes, but finished second to Clarence at 26:45. Stan Chilton picked up another trophy for third place with a 26:06.

Ornithopter was a last-minute addition as an official event and attracted eight entries, an unheard-of number not too many years ago before the quantum performance leaps which occurred with the perfecting of the four-winged canard configuration.

One of the major figures responsible for the advanced thinking that went into the development of the canard flapper has been Frank Kieser, this year's Nats winner, who posted a best flight of 9:33. A disciple of Frank's, as well as the holder of several current national records in Ornithopter, Roy White was predictably in second place, flying his Miss Teenage America to a 9:30 best time. Senior Don Slusarczyk continued to prove his versatility by ending up in third by flying an excellent 8:55.

In wrapping up the results of this year's Indoor competition, it must be said that Indoor at the Nats has been getting better and better each year, thanks in large part to the hard work, dedication, and organizational skills of Melody and Richard Doig. Sticklers for written rules, the Doigs provide a very structured contest environment where every competitor is assured of being treated in the same impartial manner. Placing that frame of reference within the spacious and friendly confines of the Kibbie Dome assured everyone of a great contest.

Helldiver/Paul

Continued from page 79

tial to silicone glue for attaching my fuel tanks. It anchors the tank securely and dampens engine vibration somewhat. I suggest adding the tank before doping the fuselage.

Silicone glue works great for the landing gear doors as well. I coated the inside of the door liberally with the glue, then held them in place with masking tape until the glue had set. So far, the doors have remained attached even when flying the model off grass.

Use the nylon landing gear clips to hold the gear to the wings. The type that features a premolded hump for the wire saves weight because it can be mounted to a plywood plate, doing away with the need to cut grooves into a heavy mounting block.

Finishing a model like the Helldiver is a highly personal matter. My preference is to cover all wood surfaces with tissue to seal the grain and add strength. The wings can be covered with either plastic or tissue, I used silkspan for simplicity.

After shrinking the tissue, apply about five coats of clear dope, then add the color of your choice. The prototype features gray upper surfaces and white undersides. Black trim tape was used for the lines, and the canopy was masked and painted. The insignia was cut from black contact paper and adhered with a coat of clear dope around the edges to resist fuel seepage.

Flying. After bolting my trusty O.S. .35 onto the nose and soldering on the wheels, it was time to check the balance point. The prototype balanced fine without the need for adding lead.

At the flying field, the Helldiver proved the dependable flier I'd hoped for. Performance was outstanding in the round maneuvers and quite respectable in the square figures. The ample side area assures that the model stays out on the lines with no trouble.

The SB2C meets my basic goals. It's simple, realistic-looking, and flies the AMA aerobatics pattern with good marks. Expect

Continued on page 188

some quizzical glances, though, if you fly this model inverted with the canopy open; it looks a bit odd that way!

Scale Soaring/Blakeslee

Continued from page 90

bies, Beemer RC West, Viking Models USA, Santa Monica Sailplanes, Airtronics, Futaba, Scale Model Research, Sig Models, Ace RC, Tower Hobbies, Windspiel Models, Top Flite Models, Combat Models, Hobby Lobby International, Kookaburra Publications, and Bob Moore Photographs.

DH 88 Comet/Berliner

Continued from page 100

and ended up on display in the National Air and Space Museum, where it can be seen today.

The brilliant red Comet became instantly famous, perhaps even more than its pilots and certainly more than the men who designed and built it. After returning to England, Grosvenor House was displayed around the country to huge crowds. The Comet flown by Cathcart-Jones and Waller stayed in the record-setting business and was sold to the French government in 1935. Mollison's Comet was sold to the Portuguese government.

The Grosvenor House (pronounced GROVE-ner) was transferred to the Royal Air Force in the spring of 1935 for test work, cutting off its career as a racing plane. The aircraft appears to have been a bit hot for service pilots, and its military life was not a happy one. A final very hard landing in September 1936 did major damage to the landing gear, cowlings, props, engine, and fuselage. The airplane was struck off the military records a few months later and sold to a scrap dealer.

Grosvenor House was picked up in 1937 for $1,200 by Frederick Tasker, who turned it over to racing specialist Jack Cross for restoration. Renamed "The Orphan," it emerged done up in blue and gray in time for the New York-to-Paris Air Race scheduled for August 1937.

That race was canceled and replaced with a European-based contest. The course ran from Marseilles, France to Damascus, Syria and back to Paris. The refurbished Grosvenor House did very well. Flown by Arthur Clouston and George Nelson, the airplane averaged 196 mph for the 3,850-mile race, finishing fourth behind three big Italian Savoia SM.79 bombers.

Continued on page 190

"He's just waiting for Don Srull's Dornier DO-X to go O.O.S.!"