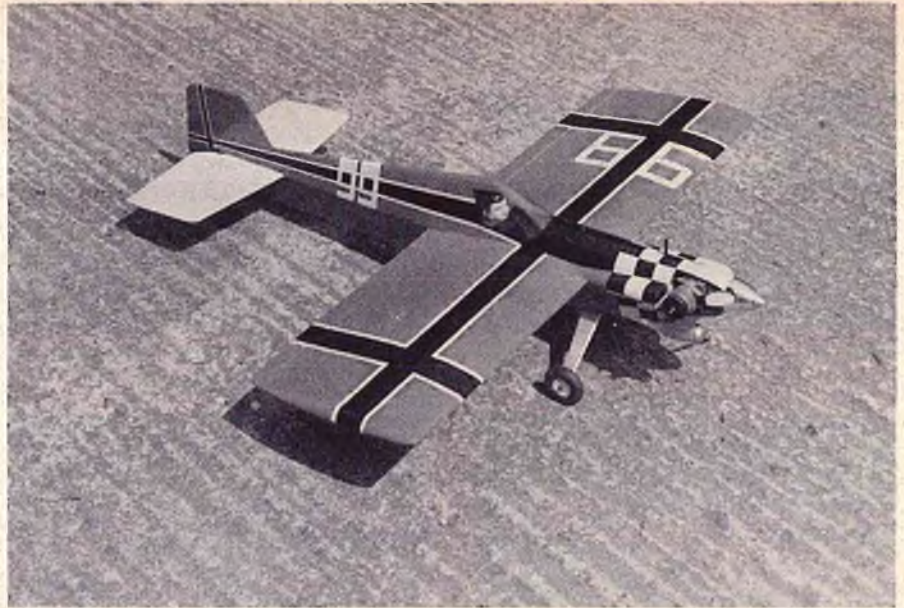


Quarter Midget and Half-A Pylon Racing, conceived and introduced by R/C Modeler Magazine as competition events for the sport flyer, have nearly reached the degree of specialization of Formula I. Whether racing stock Volkswagens or Indy 500's, the speed is relative, as long as each is racing in its own class against equal machines conforming to standard parameters. This is why Club 20 racing has become the most popular sport racing event in the United Kingdom. RCM is proud to introduce it in the United States, along with plans for a Cassutt Club 20 racer.

By Gordon E. Whitehead



CLUB 20 PYLON RACING

● The stated purpose of the smaller pylon racing classes which have been introduced over recent years has been to establish a cheap, simple class of pylon racing in which anyone could compete who couldn't afford Formula I or FAI. Two classes which are enjoying popularity at the moment in the U.S. are QM and 1/2A. These classes only lasted for a brief period in Great Britain, while it appears that they are becoming specialist events in their own right in the United States. They died in the U.K. because of this specialization.

Over the past year, a new pylon class has become popular over here, called "Club 20". Thinking that your Editor might be interested in a plan, I sent him the Cassutt described later, suggesting that it would at least make a good sport job. Don replied that, rather than just submit a plan for a non-existent racing class over on your side of the Atlantic, I should accompany the plan by a description of Club 20. So here goes!

The originator of the Club 20 pylon class is David Boddington, who writes a regular "Sport and Single" (i.e. "Sunday Flier")

column in one of our magazines. In August 1974, having never previously evidenced much interest in pylon racing, he suddenly wrote that he thought that 1/2A (at the time our one remaining small class) was too hairy for our average weather conditions, and that a less specialized version of QM was needed if cheap pylon racing was to survive. In September, a set of rules appeared, and throughout 1975, Dave's enthusiastic efforts to de-tune pylon racing bore fruit.

Why the name "Club 20"? Well, the original idea of the class was for inter-club team competition for models with a maximum engine displacement of .20 cubic inches. By specifying an event for 4-man teams, it was hoped that the advantages of practiced top-line fliers would be 'diluted'; it is unlikely that any one club would be able to field a team of four Clive Walls or Bob Violets. The team idea never caught on, but the name stuck, and the class has become popular. Speeds are slower than QM as one would expect, and about average for a .40-.60 powered pattern ship. For instance, at last year's RAF MAA Championships, in

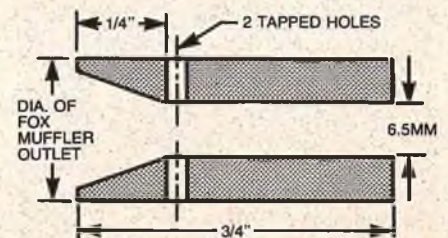
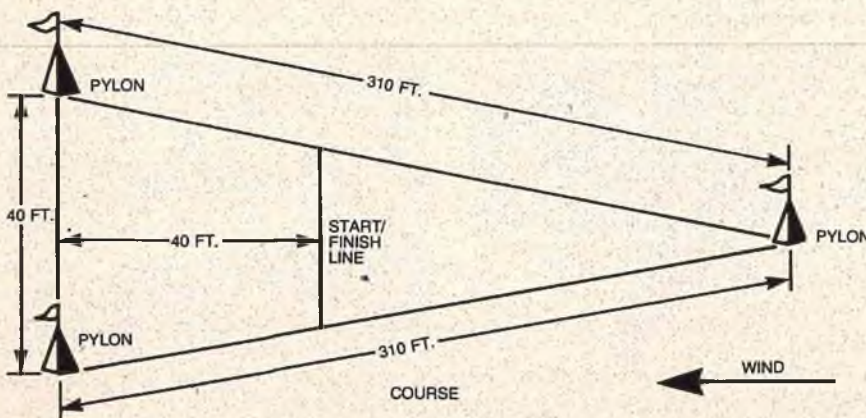
the open pylon event, my Club 20 racer came second to a ship of New Era II size powered by an OS .40; we both beat an HP .61 powered Super-Star! All three used fixed gear, mufflers and straight juice.

The Model:

One factor which contributed to the rapid growth of Club 20 was the quick reaction of kit manufacturers. Several redundant QM kits were quickly changed to meet the rules, while Dave Boddington had three of his own designs on the market before the 1975 season started. Virtually all models are flown on aileron-elevator, while throttle control is optional. Models are launched by hand, and a fixed two-wheel undercarriage is normally worn by the models, unless the grass is long, in which case the gear may be removed — at the discretion of the contest director! Dimensional differences between Club 20 and QM include thicker tips, and a lighter minimum weight restriction. Micro radio gear is a must in order to achieve the 34 ounce minimum using three functions, but with 2-function mini-propo 36 ounce is practical. Model shape is unlimited, except by a semi-scale requirement which relies on a strong contest director to use his authority correctly.

Motors:

It is now well known that for a pylon class to become accepted at club level, costs must be on a par with normal flying (give or take a



few extra prangs!) In order to help control costs, a 14 Pound (say 30 Dollars) engine price limit was introduced. In 1974, all popular .19's were thus allowable. The limit held good for only a few months, when inflation elevated the costs beyond the limit. The rules were quickly changed, and now only unmodified 'named' engines are acceptable. Who names the engines? Well, up to now in the United Kingdom, Dave Boddington, I guess. If this appears too autocratic to you, I'm sorry. If a manufacturer, importer, or modeler thinks that his engine should be included in the "Acceptable Engines List", he can submit a suggestion to Dave. Dave Boddington will then evaluate the engine using published figures, and accept it, or reject it on performance and noise grounds. If a manufacturer up-rates his .19 or .20, or produces a new design, then the new engine will have to be reviewed on its merits. Actually, since the BMPRA only had the FAI class left for which to organize events, it has 'accepted' the Club 20 specification as an 'official' class, but one hopes that engine selection will still be pursued using present criteria. The main essential is that a means of publicizing engine acceptability is readily available, and the model magazines can perform this service.

Only the standard manufacturer's muffler may be used, (but see later) and no engine modifications are permitted.

Standard R/C carbs (excluding Kavan) or ordinary free-flight carbs are permitted, as is pressurization. To help enforce the no-modifications rule, if a competitor seriously thinks that a fellow competitor has 'breathed on' his engine, he may insist after the racing, and on the deposit of 2 Pounds (4 Dollars) that the suspected engine be taken apart for inspection. Should the complainant's beliefs be found groundless, the accused modeler will get the money deposit. Should the engine be found to have been re-worked, the owner forfeits his comp points (and those for previous comps if in a league) and the objector will recover his deposit. Having witnessed a successful complaint progressed, all I can add is that it seems necessary to make the rules more specific, e.g., no carb improvements and all nuts and bolts to be original. There aren't many modifiable parts in a 2-stroke; perhaps a list of parts susceptible to modification, together with all possible mods, should be drawn up, and a specific prohibition of all such mods publicized to satisfy barrack-room lawyers.

Certain modifications may be mandatory. In the case of the Fox .19, the size of the muffler outlet is not acceptable, from noise and power considerations. In the future, a restrictor insert of 6.5mm I.D. and 3/4" length will have to be fitted to make the Fox .19 compatible with Club 20. Sorry Duke! But surely a modified silencer is better than the indignity of a complete ban?

The list of presently acceptable engines is as shown in the rules:

Propellers:

Only nylon props are allowable, though one may modify the blade shape if required. Since much of our club flying is done over

rough grassland, a ban on wood and grp props was instituted to help minimize breakages.

Fuels and Tanks:

A standard 5% nitro mix is to be provided by the organizers. At first, 'straight' fuel was suggested and tried, but the small nitro addition eases engine adjustments, yet only raises power output slightly. Metal tanks are recommended, with single vent — fill and pressurize via the same vent.

Courses:

The course used is the old British 1/2A course — two base pylons, 40 feet apart, and a third pylon 310 feet upwind of these. Race times now average 1-25 for a 10-lap course; if this is not as fantastic as QM, remember that there is another factor affecting enjoyment of racing besides pure speed — that of relative speed. A VW Beetle race would be exciting if the chosen course was conducive to close racing — the Club 20 course exactly matches the model specification, and racing is close and exciting.

Conclusions:

Well, here we have yet another attempt at defining that elusive "everyman's pylon race class". Club 20 isn't a class for novices — it's a class for novice racers — or even the more expert if they're interested. So far the class has survived without the deadly seriousness of FAI pylon racing, and everyone thoroughly enjoys himself. I hope that the foregoing will provide food for thought. The present rules are outlined below. (The 'other engines' paragraph in Rule 7 is my interpretation of the present situation — no definite ruling has yet appeared, even though what I have written is what occurs in practice. The situation is eased, however, because most people use the Veco .19.)

RULES

1. OBJECTIVE

To provide closed course racing for the sport flyer and novice racing enthusiast.

2. GENERAL

Models should be scale-like in appearance and similar to full-size propeller-driven aircraft. The Contest Director shall have the discretion to disqualify any model that he considers does not represent a full-size aircraft in a practical form. There is no restriction on the type of radio control or the number of functions. Any hazardous or dangerous flying, in the opinion of the Contest Director, will be cause for immediate disqualification.

3. MODEL REQUIREMENTS

a) FUSELAGE: At the widest point the basic fuselage must be a minimum of 2 3/4" and the depth of the fuselage must be a minimum of 5" at its deepest point. These dimensions must occur within the wing chord but need not coincide.

b) WING: The wing area shall be a minimum of 300 square inches and have a minimum thickness of 7/8" measured outside the fuselage/wing fillets. The wing thickness may decrease in a straight taper from root to tip with a minimum thickness of 5/8" at the tip.

c) LANDING GEAR: The landing gear is to be fixed with two wheels of a minimum diameter of 1 1/2". Conventional tail wheel/skid configurations of landing gear

are to be used. At the Contest Director's discretion, the landing gear may be removed and hand launch permitted — usually when racing over rough pasture.

d) ENGINE: Displacement of the single engine shall not exceed .20 cubic inches. The engine must be stock, available through normal retail channels, fitted with the manufacturer's recommended muffler. The use of an R/C carburetor is optional. Pressure feed from muffler or crankcase to the tank is permitted. No re-working of the engine, carburetor, or muffler will be permitted, except as specified in these rules.

The only engines permitted for use in Club 20 races are as follows:

- (1) OS .20
- (2) Enya .19 or .19 BB
- (3) HB .20
- (4) Veco .19
- (5) PAW .19 Diesel
- (6) Webra .20
- (7) Fox .19 with closed front silencer and muffler outlet restrictor shown in sketch.

Other engines must first be scrutinized by the Club 20 organizing body. If accepted as meeting Club 20 requirements, the engine must be publicized in an appropriate publication (e.g., 'Racing at Random' in RCM).

e) SUSPECTED ENGINE MODIFICATIONS: After all racing is ended, on depositing 2 Pounds with the Contest Director, a competitor may insist that a fellow competitor's engine be dismantled to be inspected for re-working. If the complainant's belief is found to be groundless, the accused may keep the 2 Pounds. If the engine is found to be re-worked, the accused forfeits all points in that race, and all previous races if in a league; the complainant's deposit is then refunded.

f) PROPELLER: Only fixed-pitched nylon propellers are allowed. Propellers may be re-worked if desired.

g) SPINNERS: A rounded-nosed spinner must be fitted with minimum diameter of 1 3/4".

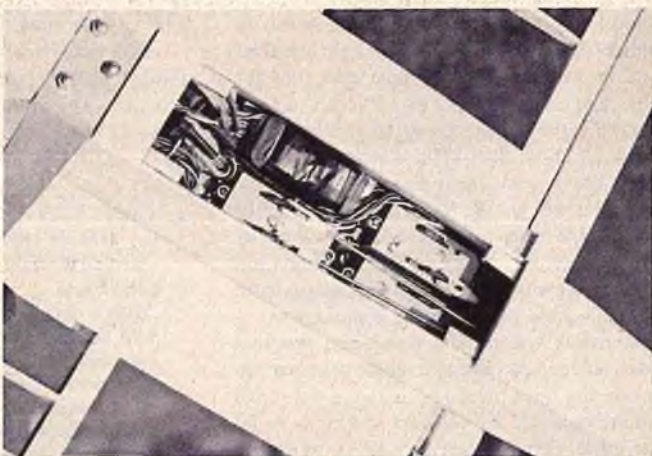
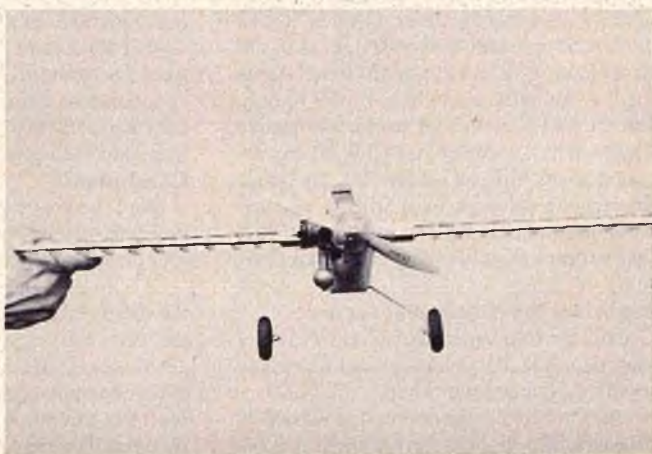
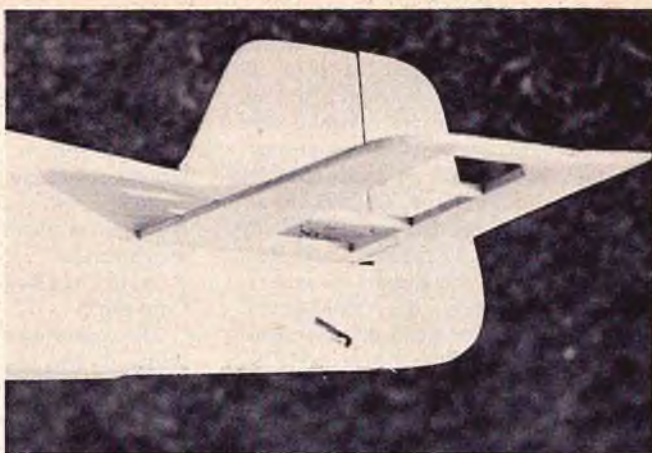
h) WEIGHT: Flying weight must be between 34 ounces and 50 ounces.

i) FUEL: Standard commercial 5% nitro fuel, provided by the race organizers, is to be used.

j) RACE COURSE AND PROCEDURE: A maximum of four aircraft will be flown in each heat. Models will be hand launched from behind the start-finish line. Two minutes will be allowed for starting engines. A total of six minutes will be allowed for the race from the commencement of engine starting; any model not landed within this period will be disqualified. A normal complement of flag marshals, pylon judges, starters, and other race personnel will be employed. All laps will be flown counter-clockwise with turns to the left.

k) SCORING: Points for heats will be as follows: 8 points for first place, 6 points for second, 4 points for third, and 2 points for fourth. One cut equals automatic fourth place, two cuts equals zero points for that heat. (Scoring is not fully sorted out yet, as some club events are timed, others pointed. You take your choice, but our national league is scored on a points basis at present).

The Cassutt modeled here is semi-scale, because I've stretched and squashed it here
text to page 124



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SUNDAY FLIER

from page 122/57

Do you agree? If not, then tell me what you think.

To show that Eric is not just a theorist, he also sent in an item for the feature "For What It's Worth." I've turned it over to the editor for consideration.

☆ ☆

To wind up this month's column, I'd like to repeat what I've said before. This is a column for Sunday Fliers, about Sunday Fliers, and by Sunday Fliers. Your letters are virtually the sole source of information I have as guidance when deciding what goes into a column. If you include a stamped, self-addressed envelope, you'll get a personal reply, and in addition, if it is of general interest to all Sunday Fliers, it'll go into the column — maybe not for several months, but at a time when it will fit into the general theme.

So, don't forget to write. □

CLUB 20 CASSUTT

from page 53/52

... and

there to fit the Club 20 rules. The tail area is 20% of the wing area, and the tail moment was kept long to ensure a smooth flying ship.

CONSTRUCTION

The wing is simple, but the fuselage is a little more complicated and should not be started until the wing has been built and the aileron horns installed. Cut out all parts before you start and assembly will flow easily.

Wing:

Lay down the bottom spar, glue the notched web and ribs in place, followed by the top spar and false leading edge. The ribs will need blocking up until the above assembly is dry. Then remove the assembly, and add the trailing edge by pinning and gluing the ribs down onto the lower trailing edge sheet, followed by top trailing edge and 1/4" squares. When dry, add the leading edge and center sheet followed by the tips. Add the aileron horns and carve the ailerons to shape.

Fuselage:

Evo-stick (contact cement) the 1/32" doublers in place, then mark all former positions. Assemble the lower half of the fuselage. Leave the 1/8" x 1/8" stempost about 6" high and use it to sight along the fuselage for removing twists and "banana bends". When thoroughly set, epoxy the wings in place. Add the upper fuselage sides, top decking, tail group and cowl. A standard metal or nylon mount will fit inside the cowl, but the HB .20 has the advantage of radial mounting already. When planking the cowling, I bolt the center of the cowl ring to the motor shaft, then support the cowl front ring 1/8" behind this, using scrap balsa. I plank the cowl around the engine — this means a close and accurate fit between spinner and cowl is assured.

Finishing:

My first prototype was tissue and doped; when completed it weighed 34 ounces with three channel W.E. Digit Migit. My next two were also tissue all over, but my team mate/helper has sheeted the L.E. and used iron-on film. We are using tip weight to counterbalance the engine as well — the first prototype needed left aileron trim under power.

Flying:

With the C.G. and control movements shown on the plan, the Cassutt is a smooth, yet respon-

to page 128

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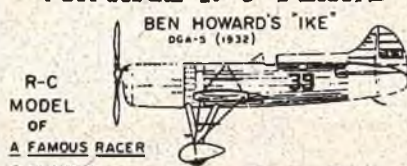
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CLUB 20 CASSUTT

from page 124/52

sive, little ship. Hand launches are recommended for first flights until you get used to her. Although easy to fly, she is competitive, and even on a cooking .19, will climb vertically until out of sight — and that doesn't take long!

The tank shown allows you to stop the motor by rolling inverted, but will still permit plenty of aerobatics. So even if you don't want to race, you can still have loads of fun. □

SENIOR FALCON IV

from page 45/41

nylon mount will have to be notched out in the middle to allow the use of a steering arm in the middle of it. If not, it will interfere with the hatch.

Before sanding the nose block to its final shape, it might be well to hold off till the hatch has been built.

The pilot's cabin hatch is constructed per the conversion plans. When constructing it, you will want to make it a bit oversize. This is done in order to make a tight fit ala sanding. 5 minute epoxy was used here to speed things up. This hatch requires no strength, so soft balsa was used. When ready to fit the hatch, place the wing on the fuselage. Use masking tape to hold a piece of sandpaper over the top leading edge of the wing. Move the hatch back and forth to acquire the shape and fit to the wing. Balsa part "E" will be glued in place later. Be sure that the forward part of the hatch is against former #1.

Now with the hatch fitted, place some glue on the face of former #1 and the face of the hatch. Not too much, but just enough to let the forward parts become glued together. Set the hatch in place and hold down with masking tape. While this is in position, you can finish sanding the nose to shape. When dry, take a razor saw and cut at an angle as shown on the conversion plans. Off comes the hatch (you hope). The windows were routed out with a Moto-Tool. Clear MonoKote was used for the windows.

Covering turned out to be real easy using MonoKote. The only places I was unable to cover were the nose and engine nacelles. There I used Epoxy paint to match the MonoKote.

The radio installation was kept as far back as possible. Quite often a Sr. Falcon comes out tail heavy, but not with four engines hanging on it. The Enya is somewhat heavy for its size, so if something else like OS engines are used, you might not have to be so concerned. As it turned out, the C.G. balance point came out just as prescribed in the kit plans.

When finished, be sure your angle of attack is on the right plane. Don't let the nose position become too negative. It'll take forever to take-off. Position the nose gear height with the steering arm lock screw — this should give you the adjustment needed. The angle as shown on the plans works well (relationship of nose gear to mains).

The best way to describe the flight characteristics is to tell what happened on the Senior Falcon IV's maiden flight.

Belonging to a large R/C club, I, like any RC'er, brought it to the club meeting. I had just finished it and wanted it for show-and-tell. The remarks, like I said, were "You got to be kidding, a 4 engine Falcon?" Well after everybody stood agasp and picked it apart, they badgered me into saying I would fly it the next day at our club field. "My gosh, what am I saying?" I thought to myself. No, that isn't what this project was all about.

to page 130

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