

BRUCE RANDLE'S

# GANNET- A.E.W.3



In response to many requests, we present the plans for this magnificent 1962 Nationals winning C/L scale model. The ingenious dual engine installation is an engineering project, but the model can also be built as a "single" by those without workshop facilities.

**T**HE aircraft XL 451, of which this is a scale model, was the third production Gannet and was one of the prototypes that was chosen to establish the deck-landing performance of the A.E.W.3. With the aircraft fully equipped, a total of 48 arrested landings and free take-offs were made.

The most notable feature of this model is the fact that it is powered by two engines, both completely independent units, one of 6 c.c. and the other 2.5 c.c. (glowplug). Although there are two engines, the aircraft is capable of cruising on one engine alone, like its prototype. The twin throttles are interconnected to the flaps and arrester hook and all are controlled by a third line. The necessity for the aluminium nose construction is evident by the fact that it houses 24 roller bearings. The two vents directly behind the cockpit are for a gravity feed lubricating system and engine access is obtained by three removable cowlings.

## Building Sequence

These are not intended to be exhaustive instructions as this model is only intended for advanced modellers, but this sequence of construction will save a few headaches.

The wings are made first in the conventional manner, L/E, T/E, ribs and spars, remembering that the ailerons are built separately. The fully machined and assembled main undercarriage is bolted in

and rear spar, carefully checking the alignment. The upper and lower  $\frac{1}{4}$  in. sq. bellcrank mounts are then cemented in place, followed by F.9, again checking alignment. F.3, F.6, F.7, F.8 can now be cemented in place. The four engine bearers are now glued in place with Araldite, followed by the cockpit floors 1 and 2 and F.1, F.1A and F.2.

Build the  $\frac{3}{32}$  in. fin outline on the plan, cement the two  $\frac{1}{4}$  in. ply arrester hook mounting keels in place and the  $\frac{1}{4}$  sq. in. tailplane mountings. Build up the tailplane and elevators and when dry sand to section. Cement this assembly to the mounting. Make up bellcranks 1 and 2 and install on a  $1\frac{1}{2}$  in. x 6 B.A. mounting bolt.

Make up and install the elevator pushrod. Bend to shape the arrester-hook and install on the 8 B.A. pivot bolt, connect the hook to the No. 1 bellcrank with an 18 S.W.G. pushrod, bent as shown. It will be noticed that the two pushrods are bent acutely to avoid cutting into the rear cockpit.

The "Randle Mamba" assembly can now be installed *complete*, remembering to have 0.010 in. backlash in the gears. The front bearing can be adjusted fore and aft by the two 6 B.A. mounting bolts. It is essential that this front bearing be in perfect alignment with the shafts. The throttles can now be coupled by 18 S.W.G. push-

rods and that from the Max "35" joined to No. 1 bellcrank. The return spring on the bellcrank can be installed, attaching the other end to F.5. No. 1 bellcrank should need a pressure of 3-4 lb. to actuate it fully.

If you are only using a single "35" engine this will have to be installed side-winder and positioned so that the propeller coincides with the rear A/S position, or inverted with an extension shaft as shown. The sidewinder installation will entail revised bearer mountings, which must be borne in mind when the formers are being cut. I do not intend to go into further detail as it is a perfectly straightforward modification, which will present no problems to the experienced modeller, provided construction is commenced with this in mind.

The uppermost part of the fuselage can now be covered with  $\frac{1}{8}$  in. sheet for approx.  $\frac{1}{3}$  depth of the fuselage. With F.14 and the fin outline added, F.15, F.10, F.11, F.12 and F.13 can now be cemented in place. The fin and rudder can then be covered with  $\frac{1}{8}$  in. sheet and the block balsa fin fairing added.

The fuel tanks should now be fixed in position. The large one in the fuselage and the smaller between W.1 and the larger tank, remembering that a little extra height with this installation is an advantage. The vent, feed and filler systems can be installed as per plan. The aluminium formers and keel can be installed, using 8 B.A. bolts peened over after assembly. After machining, the nose u/c assembly and two braces are finish-filed to shape, the

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## 70 LAPS at 100 M.P.H.!

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carried as far inboard as possible. To achieve a better engine layout for this, I had the disc of my motor redrilled to allow me to rotate the rear cover plate so that the intake of the inverted motor was at the top right hand corner, viewed from the rear. (Mr. K. Bedford will deal with this for E.T.A. owners.)

I have now had a new motor built for me by Fred Carter with the needle valve assembly made so that it comes vertically through the top of the pan, but you will find it quite simple to reverse the normal needle valve assembly to bring the needle through the pan at an angle of about 45 deg., pointing inboard. This also leaves the tube connection for the tank in an ideal position.

Having achieved a "standard" model set up, it was possible to do hours of practising with various brews, knowing that if we did not have a decent run, it was only attributable to

the fuel. I then tried countless concoctions of fuel, each time learning a little more, until I finally hit the jackpot with approximately 77 laps at about 105 m.p.h. with the "B" model and 38 laps at between 96 to 103 m.p.h. with the "A" model.

The fuel I finally settled on contains 12½ per cent. Nitro-methane, 2½ per cent. Nitro-benzene, 20 per cent. Iso-Propyl-Alcohol, 40 per cent. Iso-Propyl-Benzene (Cumane), 25 per cent. Castrol R. I found Methanol to be completely unnecessary and any addition of this only reduced the laps. Iso-Propyl-Alcohol is necessary to help make up the base, but it does not like Nitro-methane and I found the addition of extra Nitro only gave erratic running with this percentage of Iso-Propyl-Alcohol.

This formula is very easy on plugs, but starting procedure must be tailored to suit it. Starting from cold the needle must be opened up a full turn above the best running setting and slowly turned down as the motor warms up.

Once down to the running setting, the motor must be kept warm with frequent warm up runs until the "off." Do not make the same mistake as I did in the final of the 1962 Nationals by feeling if the pan was warm, to determine if the motor was at the right temperature, as the pan had conducted the heat from the motor, while the motor itself was cooling rapidly. One final word of advice on this fuel. Do not practise unnecessarily on it. It will not damage your motor in any way, but it does tend to stain the skirt of the piston, thus reducing the heat transference from piston to the liner.

In answer to the many questions I have had on the subject—"yes, I do think 140 laps is possible in "B" racing (John and I have had 102 laps), but I don't think it will be practical to use, as this would mean changing fuels between the heat and the final and I have learnt to leave well alone during that period."

Well, I hope these formulae will be of some help and I look forward to racing against you this year.

hinges consisting of 8 B.A. bolts. The nose oleo is then assembled, using a spring that, when fully extended, just supports the A/C weight and is fully depressed with a load of 4 lb. This assembly is bolted to the nose keel.

The rear cockpit detail should be incorporated at this point. Make up the drop tanks, sand to shape and install in the appropriate positions.

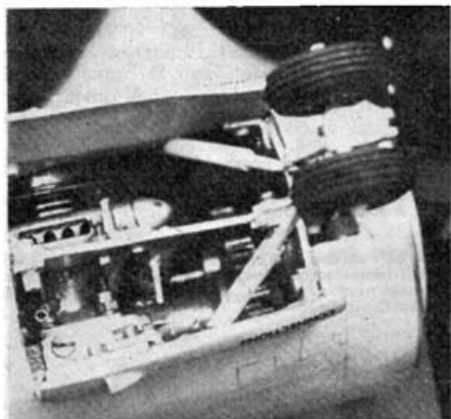
Now fit the braking system. This consists of  $\frac{1}{8}$  in. ply bellcranks and 18 S.W.G. rods. It is important that the bellcranks must have the maximum leverage, i.e. 90 deg. between rod and bellcrank, as the diagrams illustrate. Braking is achieved from the flying bellcrank by virtue of a swinging lever, which strikes its spring returned counterpart on the action of full down elevator. Accurate assembly of this linkage is essential, since the rod movement is so small.

After checking all systems, the fuselage can be planked with  $\frac{1}{8}$  in. sheet, using Araldite around the nose. When dry this is sanded smooth and then the upper surfaces of the wings sheeted. The anti-spin fins are now fitted to the tailplane and the landing and navigation lights added. A  $2 \times 1\frac{1}{2}$  in. access panel is located on the starboard side of the nose, for access to the O.S.15, this is a tongue fit at the bottom and is held at the top by a screw into the aluminium engine mount.

The whole assembly can now be sanded completely smooth and covered with lightweight tissue. Apply several coats of sanding sealer, sanding between coats. Before the final coats, all the air intakes and outlets, serial fixings, panel lines and inspection panels, radome fixings, pitot head (port lower) are added and a final smooth finish can then be obtained.

The model can now be painted (I used Humbrol enamel), "sky" lower surfaces and sea grey upper surfaces. This is given a coat of lacquer and then all the small stencilling inspection panel lines, steps and wing walks are added. When satisfied, the whole model is sprayed with a final coat of clear gloss.

Close up of the nosewheel/front engine installation.



FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1, PRICE 6s. 6d., POST FREE.

