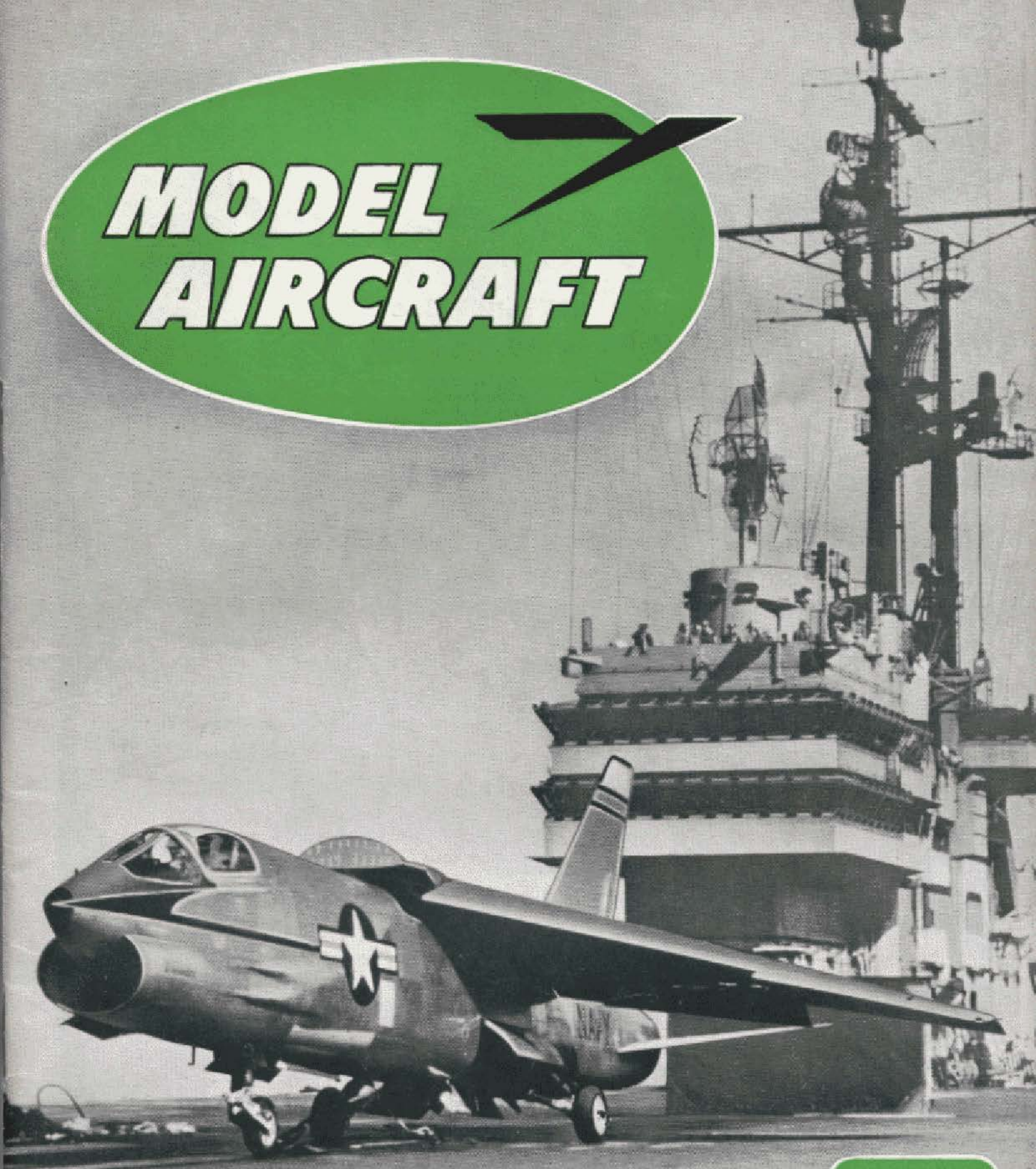
# MODEL AIRCRAFT



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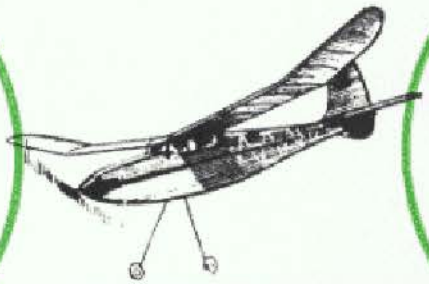

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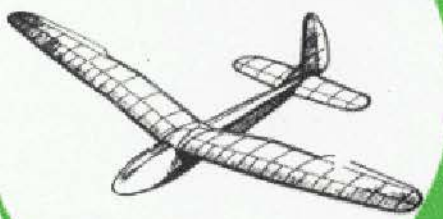

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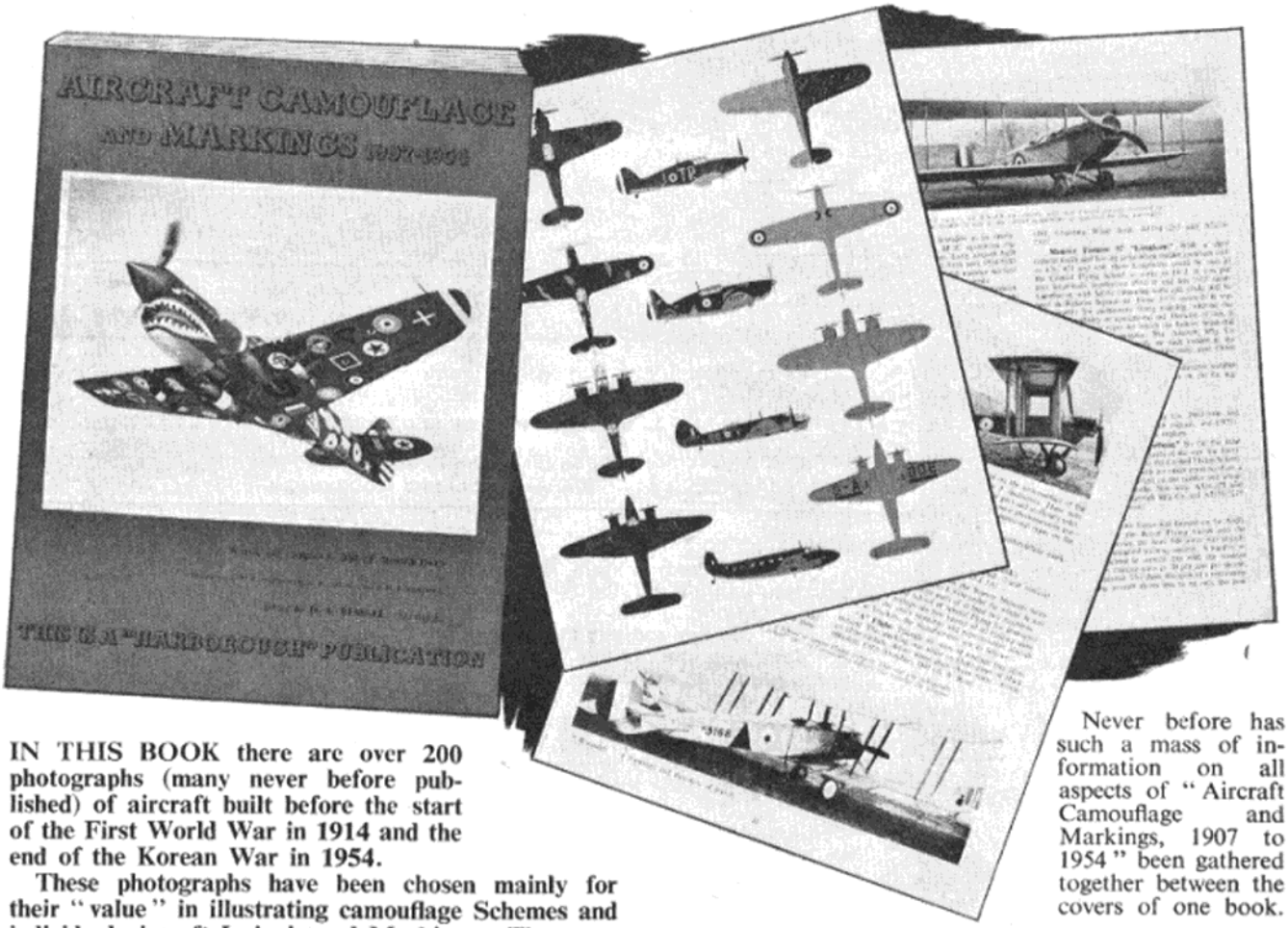


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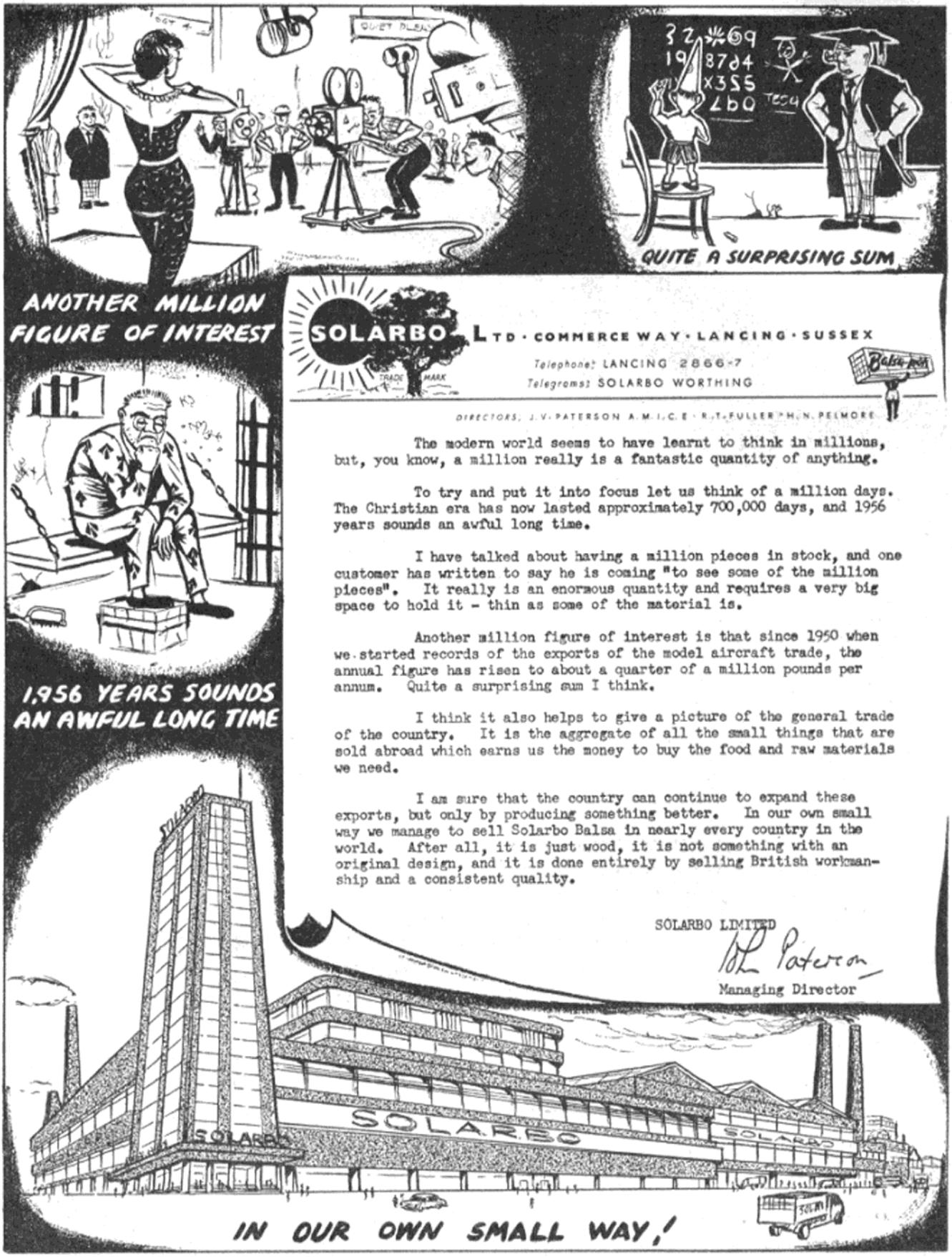
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The modern world seems to have learnt to think in millions, but, you know, a million really is a fantastic quantity of anything.
To try and put it into focus let us think of a million days. The Christian era has now lasted approximately 700,000 days, and 1956 years sounds an awful long time.
I have talked about having a million pieces in stock, and one customer has written to say he is coming "to see some of the million pieces". It really is an enormous quantity and requires a very big space to hold it - thin as some of the material is.
Another million figure of interest is that since 1950 when we started records of the exports of the model aircraft trade, the annual figure has risen to about a quarter of a million pounds per annum. Quite a surprising sum I think.
I think it also helps to give a picture of the general trade of the country. It is the aggregate of all the small things that are sold abroad which earns us the money to buy the food and raw materials we need.
I am sure that the country can continue to expand these exports, but only by producing something better. In our own small way we manage to sell Solarbo Balsa in nearly every country in the world. After all, it is just wood, it is not something with an original design, and it is done entirely by selling British workmanship and a consistent quality.
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# MODEL AIRCRAFT

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OCTOBER 1956 No. 184. VOL. 15


## Contents



## Cover Story

The Chance Vought Crusader is an unusual aircraft in more ways than one, as John Taylor shows on page 354 of this issue. Apart from its high top speed, it embodies most of the features desirable in a carrier-borne aircraft, such as excellent forward vision for deck landings and take-offs to name only one. This is well illustrated by *the comparison photographs accompanying* the scale plan.

If any American aircraft is to top the 1,132 m.p.h. record of the Fairey Delta 2, then the Crusader is the machine most likely to succeed.

THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS


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# Letters TO THE EDITOR

## Fields to fly in

DEAR SIR,—A short time ago you asked for views to combat the lack of *flying space around the big towns*, particularly in London.

I believe there is only one answer—Mr. D. A. Russell had the right idea several years ago when he started Eaton Bray. Unfortunately, he missed the most important point—accessibility.

If he had laid on a bus to take people from the station or better still if it had been *near* anywhere, the smallness of the field would not have put people off.

The idea of a shop and dormitory on the site is excellent, and now that the Duke of Edinburgh has honoured us with his patronage surely it should not be impossible for the National Playing Fields Association and the model trade plus the model aircraft Press and the S.M.A.E., to apply for some suitable ground to be put at our disposal for flying and flying only. The original Eaton Bray was to have had a model railway track around the perimeter and a boating pond for boats and sea-planes, etc., which would all have helped to bring in the necessary cash for its upkeep, if the airbods were too poor to do it themselves.

I personally had many happy times at Eaton Bray in spite of rough grass, ditches, etc., so what about it, chaps?

Yours faithfully,

Finchley, N.12. ERIC PRITCHARD.

## More Speed

DEAR SIR,—The editorials of your latest issues of MODEL AIRCRAFT show considerable prejudice against speed, flying as a world contest, or as the main event of a world contest. Your main theme being that too much professional influence is involved.

As an alternative event you suggest R/C. I would have thought that it was already obvious that the more technicalities involved in modelling the more it will become specialised. So need I continue with radio as an alternative, or the main event of a world contest?

As for the lack of interest in speed, might I refer you to your own magazine, which mentions no less than four records being attacked in the last few months? Wherever engines are used, there will be engine tuners, so why stop speed of all things. I would like to see support of speed rather than criticism from the model Press.

Yours faithfully,

London, S.E.9. M. TEMPLEMAN.

# Here and There

COMMENTS ON CURRENT TOPICS

# EAST MEETS WEST

## *Russia Competes in The Wakefield*

THE 1956 Wakefield Contest—a title we will always prefer to the World Rubber Driven Model Championships—was noteworthy as it was the first recognised international contest that had been entered by the Russians. It will be remembered that although the entry was received for the Russian team for the World Power Championships at Cranfield, this was cancelled at the last moment, because the meeting apparently clashed with a national event in Russia.

Even at Hoganas, it was not known until the last moment that the Russian team would be present, and in fact, they did not arrive until 1.0 a.m. on the day of the contest. Despite this they were able to put up an outstanding performance and it is to be hoped that their participation in future international model flying meetings is assured.

International goodwill is a term that has been so prostituted in the last few years as to loose its real significance, but we believe that international model meetings play no small part in promoting a friendlier spirit between countries.

During the after-the-contest banquet at Hoganas there was a pleasing incident when the Russian team manager exchanged table flags with Gerry Ritz, the American team manager, the Hammer and Sickle bearing the Russian team's autographs, while the Stars and Stripes bore those of Ritz and Gil Coughlin.

The Russian team manager also presented a gift to the Royal Swedish Aero Club as a gesture of goodwill. Which reminds us that Ludvic Nemec, the Czech team manager at Cranfield, brought a gift of fine Czechoslovakian glassware, but our customs authorities demanded the payment of an exhorbitant import duty, and so the gift was left in their custody until the Czech team returned home—hardly the way to win friends and influence people!

## *Still in Control*

GOOD news for R/C enthusiasts in the South West of England, comes from radio enthusiast Harry Stillings. In a recent letter Harry, who has written a series of light-hearted but informative articles on R/C flying, which will be appearing in MODEL AIRCRAFT shortly, tells us that he is forming a South West Radio Controlled Model Flying Society. The object of this society is to further interest and organise contests and meetings in the area, which till now has had a thin time in regard to such organised events.

Membership will be open to all, whether already members of a local club or not, and fees will be merely nominal as the object is to further R/C flying, not to make money.

Full gen can be obtained from Harry Stillings, 6, Alpha Street, Heavitree, Exeter.

## *At the M.E. Exhibition*

ALTHOUGH this year's Model Engineer Exhibition did not provide the quantity of aircraft usually displayed, there was a marked improvement in the general quality of the exhibits. This was particularly noticeable in the rubber section where an extremely neatly constructed flying wing design from W. R. Stobart, of Northampton, won a well deserved bronze medal.

Models in the other sections were of the standard to be expected in an exhibition of this type, and difficult indeed must have been the task of the judges.

The Championship Cup this year went to Ronald Chivral's ¾in.=1ft. scale model of the Sopwith *Camel*—a beautifully constructed and detailed replica of this famous machine.

Without doubt the most original entry was Neil Martin's aircraft-cum-car design. A twin boom pusher layout is used with box and tongue wing fittings, which also hold the tail booms in place. Remove the wings, slide off the tail booms, and all that remains is the nacelle which has now become a car. Definitely a very practical and "flyable" design.

In addition to his rubber entries, Mr. Stobart also won the MODEL AIRCRAFT prize with a fine model of the "M.A." plan design *Merry Miller*. This was powered with an Allbon Merlin and had a practical "flying" finish in blue and yellow.

In a brief résumé such as this it is impossible to mention all the notable exhibits, so watch out for the photo feature of the Exhibition in next month's MODEL AIRCRAFT.

## *Please Note*

In the half page advertisement of Model Aerodrome Ltd., appearing in the September issue of MODEL AIRCRAFT, the name of the town where the replica of the original galleon is now being built was given as *Brixton*, this should have read *Brixham*.

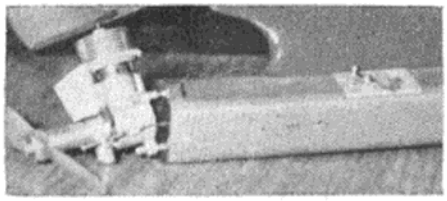
* * *

The book "Know Your Airliners" reviewed in our May issue is published jointly by Educational Productions and Perry Colour Books with the collaboration of the Shellmex Organisation, and copies can be obtained from all good booksellers.

# HERE and THERE

## at Cranfield

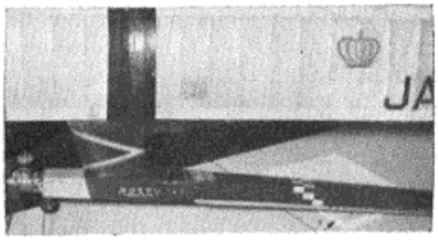
*All the Czech models were powered by A.M.A. 25 diesels and we were impressed by the neat tank and cut-out*



*arrangements the members had incorporated on them.*

* * *

*The only Japanese power entry came from Takeo Asano, and this, surprisingly, used an American K9B 15. We believe the writing on the wing read*



*"If found . . .". The model was very competently handled by youngest flier in the contest Peter Manville of Bournemouth.*

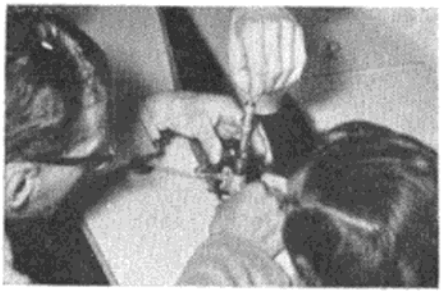
* * *

*We particularly liked the silk pennants issued to team managers by the Czech team, and here displayed to our cameraman*

*by Henry J. whom we interrupted chatting to Principal of the College, Professor Murphy.*

* * *

*An early upset for the British team came during processing, when it was found that George Upson's 2.49 Elfin was not 2.49 c.c. but 2.55 c.c. As*



Henry J. "mikes" up Upson's motor

*the motor is completely standard no blame can be attached to Upson, who was fortunately able to borrow another Elfin which this time was of the correct size. This episode does, however, lead us to wonder just how many standard 2½s are, in fact, of the correct capacity.*

* * *

*Pete Buskell, British team manager, collects the Franjo Kluz Cup from Mrs. Murphy, wife of the Principal of the*

*College. Pete was obvious choice as manager, and we are sure his experience in flying for G.B. in every previous contest stood him in good stead.*

* * *

*Sure and 'twas a solemn moment as the Irish boys prepare to celebrate their team's 4th place. Contents of the bottle held by*

*John Carroll doubtless accounted for their rather less inhibited looks later on.*

* * *

The heated arguments that had raged all day as to which was the better model, Draper's or Posner's, might seem to have been settled by the fly-off—until one works out the total flight time to motor run ratio of the fly-off flights. Posner's ratio was 21.629 and Draper's 21.333.

* * *

*First task for Draper and Posner after dinner was to fill the cup with "lemonade,"*

*which was promptly tried and pronounced excellent by Silvio.*

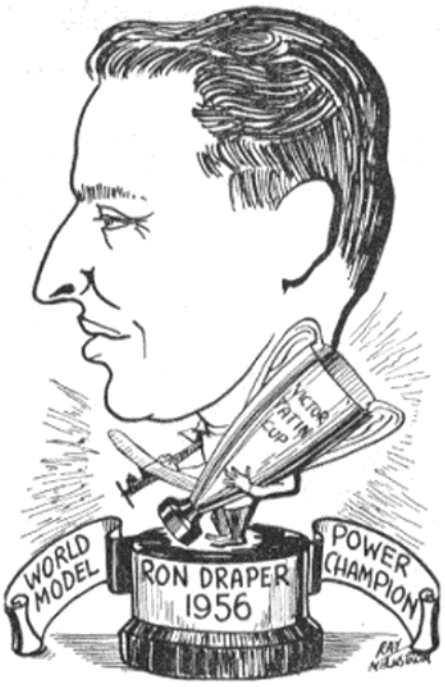
* * *

Full marks to P.R.O. Ken Brookes, for the excellent publicity the meeting received—excerpts were on B.B.C. and I.T.V. Television, Gaumont British News Reels, and a film was flown to America, where it was shown on TV on *Wednesday* evening.

In addition to all this, excellent coverage, together with photos appeared in *The Times*, and the *Daily Telegraph*, gave well informed write-ups on two days. We were, however, somewhat amused by the following sentence describing the Sunday's test flying, which appeared in the latter newspaper. "Most of yesterday was spent in the ritual known as dethermalising." This also caught the eye of our artist Ray Malmstrom. . . .

# World Power Champs


THE place—Cranfield Aerodrome; the time—6.15 p.m. and the close of the five round contest. Three fliers had tied with perfect scores—Ron Draper and Dave Posner of Great Britain, and Silvio Lanfranchi




flying proxy for Lawrence Conover, U.S.A. All three, crouching on the tarmac, awaited the whistle blast that would signal the start of the fly-off to decide the individual 1956 World Champion—this was the perfect climax to a memorable weekend that began with a reception for the teams at Londonderry House on the Saturday.

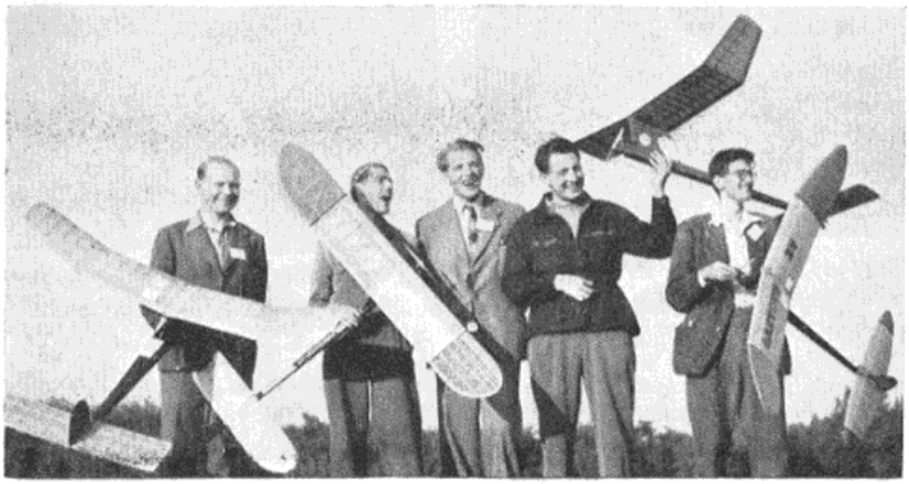
Here, the visitors from abroad were officially welcomed and there was a fair number of faces familiar from previous World Championship meetings. Coaches took the teams to Cranfield, where the accommodation laid on was first class. A few late arrivals had to be met at Bedford Station in the early hours of Sunday morning, and trouble at the Customs with the Canadian models necessitated a dash to London Airport by A. F. Houlberg to smooth things over.

Processing commenced at 10 a.m. on the Sunday and lots were drawn to determine the teams' order. A timetable also was drawn up, and despite a 40-odd minutes' delay at one period, they finally finished only about 5 min. behind schedule. Alas, the only team to cause any anxiety was the British! George Upson's engine was found to be oversize—not his fault, of course, and he managed to borrow another. Full marks, then, to the processing team headed by Henry J. Nicholls, assisted by Bob Yates, Malcolm Young, Bob Copland, Norman Marcus, Jack North, Ron Martin, Frank Holland, Harry Hundleby and Ted Sills, who is in charge of the instrumentation section of the college.

While processing was under way, there was plenty of activity out on the runway with models being test flown. Several were lost as the result of D.T. failure and the Finnish team lost three. In fact their best man, Pimenoff, lost his first model and his second crashed on its first flight the following day.

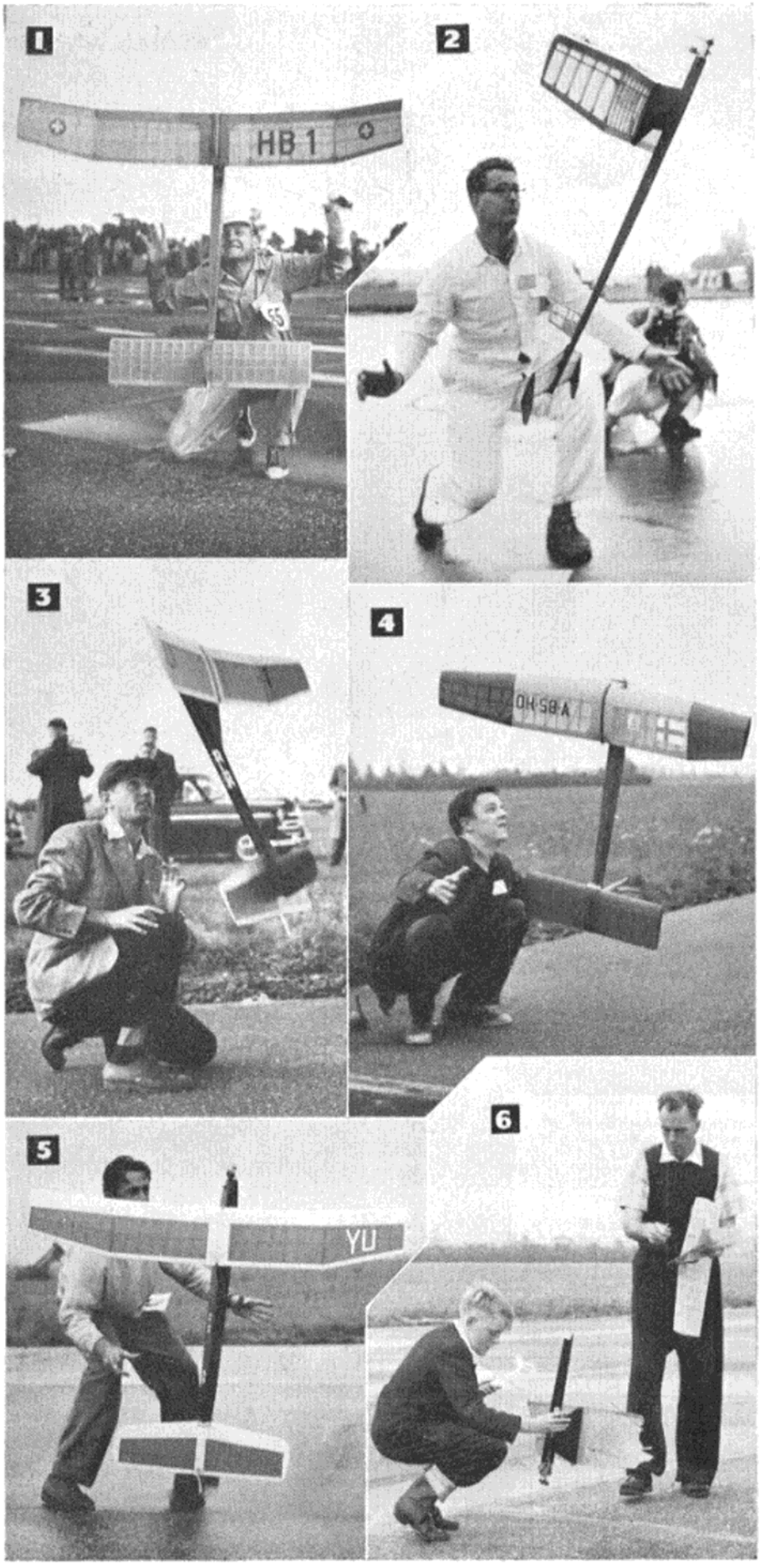
The contest started to time on Monday. There were five rounds of

**Our heading photo shows the scene at the fly-off as Draper—the last man away—releases his model. Main interest is, however, on the machines already airborne.**



**Happy smiles from the winning British Team. Left to right: George Upson, Dave Posner, team manager Pete Buskell, Ron Draper and Mike Gaster.**

1. First processing table was the weighing department, which was under the control of Colonel Bob Yates—seen here with J. Bickerstaff and the Canadian entry he was proxy flying.
2. Franco Monti, of Italy, was flying the smallest model in the contest. It was, however, climbing as fast as some of its bigger brothers.
3. Harri Raulio, of Finland, overbalances in his effort to ensure a "clean" launch after a V.T.O. Harri, incidentally, is a top class C/L stunt flier and has represented his country in this as well as F/F.
4. Youngest flier in the contest was Peter Manville, of Bournemouth, who was proxy flying Takeo Asano's entry. The model followed conventional design practice and flew well in Peter's capable hands.
5. Bob Copland and Malcolm Young hard at it in the processing room—where, due to excellent team work and organisation, the models were passed through with no delays.
6. Two more processors—Jock North and Norman Marcus—their "victim" being youngest Swiss team member Pierre Schiltknecht.
7. Roberto Bacchi, of Italy, is a noted International flier and competed at Cranfield in 1953 with similar models to those he was using this year. He recently won the International Hydromodel's Contest.
8. The only American present was Gilbert Coughlin, who proxy flew fellow countryman William Huffman's machine.
9. George Upson was unlucky in having to use a borrowed motor, but none the less placed over halfway up the results at 29th.




1 hr. 20 min. divided into 20 min. periods, during which each team had to return one score. This system, although not above criticism, is generally fair and no team is able to take advantage of weather conditions during the round.

First man away was P. Grunbaum of Austria, and his E.D.-powered model returned a time of 1 : 38. This round naturally took its inevitable toll of models that were borderline as regards trim. Grunbaum's team-mate, Hormann, watched his model make an impressive climb only to return to *terra firma* in a vertical dive with power-on. The close of Round 1 saw 23 max's recorded and with the generally high standard of flying it was obvious that the contest would be well fought out.


Round 2 started in rain, which did not, however, noticeably affect the performance of the models. Also there was a change of take-off site owing to a wind change. Unfortunately for Mike Gaster (G.B.) it was in this round that he made only 1 : 18 to spoil what eventually would have been a perfect score

1. **Rudolph Schenker, of Switzerland, looks very tense, but gets cleanly away.**
2. **A sideways position is favoured by Louis Bausch, of Holland.**
3. **Completely relaxed style belongs to Emil Fresl, of Yugoslavia. In addition to a hand made motor the model featured a prop which folded when the motor stopped and no doubt contributed to the excellent glide.**
4. **Finnish C/L speed champion, Jarmo Jaaskelainen, was proxy flying for Pavo Manninen, who was taken ill and unfortunately unable to attend the meeting.**
5. **Djordje Zigic, of Yugoslavia, placed quite high at 36th, in view of the fact that he did not return a time for the first round.**
6. **Werna Hamma, of Germany, with impromptu assistance from small boy with glider, sadly collects the results of a power on crash into the tarmac.**


of five max's. His first attempt resulted in a motor overrun, and after a hurried recovery he was given only 10 min. in which to make his second attempt before the lunch break. This obviously pinpoints one of the few weaknesses in this system of dividing rounds.

Round 3 after lunch still had frequent showers of rain with a moderate wind blowing. In a contest of this stature it was rather surprising to see so many competitors make obvious mistakes, although "nerves" no doubt contributed to a lessening appreciation of basic technique. The number of really shaky crosswind take-offs we watched could in no circumstances be ascribed to any take-off peculiarities of the models! One other point worth mentioning is that several of the models did not conform to the r.o.g. requirements, with the result that they deservedly were disqualified. This round also whittled down the number of three-max fliers to five—Draper, Posner, Conover (Silvio flying proxy), Emil Fresl of Jugoslavia, and Joseph Masek of Czechoslovakia.

The weather brightened a little for Round 4, and this round saw the number of possibles for the fly-off (which was by now obviously necessary) rapidly reduced. Fresl was flying a most interesting machine with an anhedral tailplane. It had a beautiful glide and was powered by an engine he had made himself. But he spoilt his chance of a perfect score with a flight of 2 : 57, a pity, as it would have been interesting to see how this model would have compared in a fly-off. Masek had an even lower time of 1 : 34 so was well out of the running.

And so to the last round, with Draper and Posner flying with an outward calmness that must have belied an inner excitement; they returned their 5th max's, thus making certain of the team award for Great Britain. Silvio, flying proxy for Conover of U.S.A., again demonstrated what a master of power flying he is with yet another max. He has, of course, won this contest

**1. Mike Gaster prepares for his unlucky 2nd flight in which he scored 1 : 18.**
**2. Hugo Leppert, of Germany, gives his motor a quick check before flying.**
**3. We liked the neat accumulator used by Austrian flier G. Hormann.**
**4. What the well dressed Irish modeller wears; as displayed by John Thompson.**





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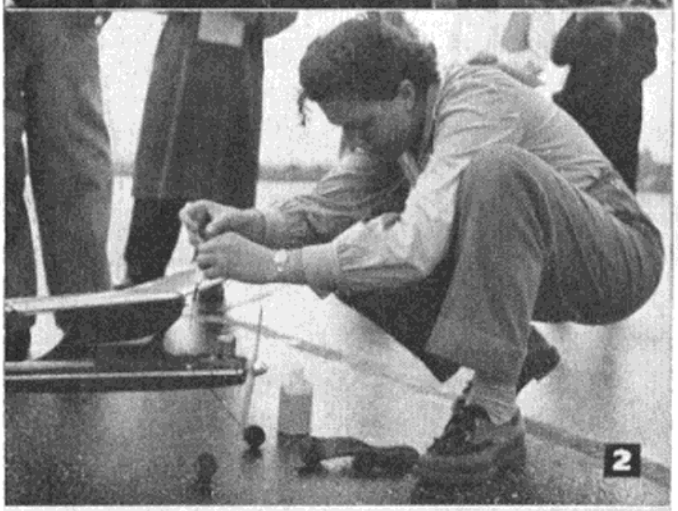
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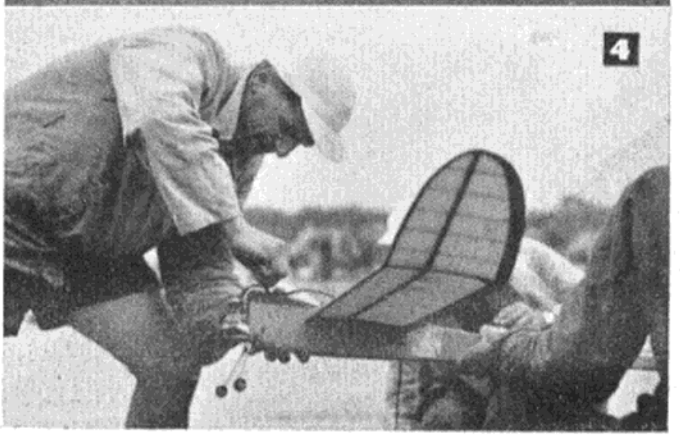
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once for Great Britain (in 1952) flying proxy for Wheeler, was second in 1954 flying for Switzerland, and has consistently qualified (though not eligible) for a team place by flying in our Trials.

The tension mounted as first Draper walked out to the tarmac, followed by Posner, and finally—after a wait of a few minutes—by Silvio. First off was Posner, whose *Dream Weaver* did not appear quite as rapid as usual, due, he thinks, to the engine cooling off after its preliminary run up. Draper was next away and definitely gained more altitude than his team-mate. His motor run, too, was of the full 15 sec. permitted, against Posner's 13—a gamble which obviously paid off. Silvio followed almost at once and then there were the three machines circling slowly in the almost calm air.

While Silvio's and Posner's models descended slowly,


Draper's machine appeared to find some slight lift which enabled it to retain its height for those precious extra seconds. First down was Silvio, with 4 : 15, followed by Dave Posner, who clocked 4 : 52. But as Posner launched before Draper the final issue was still in doubt, until Draper's model finally touched down after a flight of 5 : 20, which made him 1956 World Power Champion. Pete Buskell, who has represented Great Britain many times, did a creditable job as team manager and is to be congratulated on assisting the team in all ways.

Final event—at least in the official programme—was the banquet, where, after an excellent meal, the team managers were presented with a memento of the visit in the form of a pennant inscribed : " World Championships for Motor Driven Models, Cranfield, 1956."

Not unnaturally, the celebrations and festivities continued until the early hours of the morning, by which time the most ardent bar fliers were tired enough to retire to bed (with one or two notable exceptions !).

So ended a most enjoyable weekend, for which much of the credit must—in addition to the hardworking officials—go to the management and staff of the Cranfield College of Aeronautics, who made us so welcome.

1. **A quick check of the alignment and off to yet another max.—Draper preparing to fly in the 3rd round.**
2. **Only woman competitor was Frau Maria Rudolph, of Germany, who was very creditably placed 9th, with a beautifully built machine that she handled with great competence.**
3. **Easily distinguishable in their neat white overalls were the Dutch Team—shown here getting off to a good start in Round 1 is Gerard Fiks.**
4. **Fernand Maibach, of Switzerland, was one of the few competitors not flying a pylon design.**
5. **The Czech Team, left to right; Rudolph Cerney, Ladislov Ruzek, team manager, M. Ludvik Nemec, Vladimir Hajek and Josef Masek**
6. **Dave Posner gets off for his last max., which gave him a perfect score.**
7. **Gil Coughlin holds while Silvio checks the prop on Conover's model, which he flew to 3rd place.**
8. **Setting the scene for long periods of the contest—a Swiss model is protected from the rain.**

## WORLD POWER CHAMPIONSHIPS, 1956
### RESULTS

| | | | 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|---|---|---|
| 1. | Draper, R. | G.B. | 3:00 | 3:00 | 3:00 | 3:00 | 3:00 | *20:20 |
| 2. | Posner, D. | G.B. | 3:00 | 3:00 | 3:00 | 3:00 | 3:00 | *19:52 |
| 3. | Conover, L. H. (Lanfranchi) | U.S.A. | 3:00 | 3:00 | 3:00 | 3:00 | 3:00 | *19:15 |
| 4. | Fressl, E. | Jugo. | 3:00 | 3:00 | 3:00 | 2:57 | 3:00 | 14:57 |
| 5. | Bergamaschi, C. | Italy | 3:00 | 2:55 | 3:00 | 3:00 | 3:00 | 14:55 |
| 6. | Thompson, J. | Ireland | 2:53 | 3:00 | 3:00 | 3:00 | 3:00 | 14:53 |
| 7. | Fiks, G. | Holland | 3:00 | 2:36 | 3:00 | 3:00 | 3:00 | 14:36 |
| 8. | Schenker, R. | Switz. | 3:00 | 3:00 | 2:32 | 2:56 | 3:00 | 14:28 |
| 9. | Rudolph, Frau M. | Germany | 3:00 | 3:00 | 2:34 | 2:41 | 3:00 | 14:75 |
| 10. | Morelli, A. | Ireland | 2:11 | 2:51 | 2:58 | 3:00 | 3:00 | 14:00 |
| 11. | Asano, T. (P. Manville) | Japan | 2:21 | 3:00 | 2:26 | 3:00 | 3:00 | 13:47 |
| 12. | Gaster, M. | G.B. | 3:00 | 1:18 | 3:00 | 3:00 | 3:00 | 13:18 |
| 13. | Huffman, W. F. (G. Coughlin) | U.S.A. | 2:43 | 2:54 | 2:02 | 2:30 | 2:51 | 13:00 |
| 14. | Masek, J. | Czech. | 3:00 | 3:00 | 3:00 | 1:34 | 2:22 | 12:56 |
| 15. | Eisen, J. (F. McNulty) | Canada | 3:00 | 3:00 | 2:46 | 2:16 | 1:50 | 12:52 |
| 16. | Pfenninger, M. | Switz. | 1:50 | 3:00 | 2:05 | 3:00 | 2:56 | 12:51 |
| 17. | Sladek, R. (V. Jays) | U.S.A. | 3:00 | 2:24 | 1:26 | 3:00 | 3:00 | 12:50 |
| 18. | Bausch, L. | Holland | 2:22 | 1:53 | 2:45 | 3:00 | 2:49 | 12:49 |
| 19. | Piesk, L. | Germany | 3:00 | 1:55 | 2:27 | 3:00 | 2:23 | 12:45 |
| 20. | S'Jongers, J. | Belgium | 3:00 | 2:05 | 2:04 | 3:00 | 2:33 | 12:42 |
| 21. | Osterholm, S. | Finland | 3:00 | 3:00 | 1:53 | 2:01 | 2:32 | 12:26 |
| 22. | Hormann, G. | Austria | –:29 | 2:56 | 3:00 | 3:00 | 3:00 | 12:25 |
| 23. | Cerney, R. | Czech. | 2:42 | –:42 | 3:00 | 3:00 | 3:00 | 12:24 |
| 24. | Friis, H. O. | Sweden | –:21 | 2:57 | 3:00 | 3:00 | 3:00 | 12:18 |
| 25. | Ranta, A. (J. Bickerstaffe) | Canada | 3:00 | 3:00 | 0:0 | 3:00 | 3:00 | 12:00 |
| 26. | Domberger, H. | Austria | 3:00 | 2:20 | 1:46 | 2:25 | 2:24 | 11:55 |
| 27. | Teunissen, A. | Holland | 2:20 | 3:00 | 1:45 | 2:30 | 2:15 | 11:50 |
| 28. | Hajek, V. | Czech. | 2:48 | 3:00 | 3:00 | 0:0 | 3:00 | 11:48 |
| 29. | Upson, G. | G.B. | 1:50 | 2:43 | 1:55 | 3:00 | 1:56 | 11:24 |
| 30. | Houtrelle, H. | Belgium | 1:51 | 1:48 | 2:03 | 3:00 | 2:13 | 10:55 |
| 31. | Hutjes, W. | Holland | 1:43 | 2:11 | 2:33 | 2:13 | 2:08 | 10:48 |
| 32. | Manninen, P. (J. Jaaskelainen) | Finland | 3:00 | 1:58 | 1:34 | 1:26 | 2:39 | 10:37 |
| 33. | Raulio, H. | Finland | 1:35 | 2:05 | 2:28 | 1:12 | 3:00 | 10:20 |
| 34. | Ruzek, L. | Czech. | 1:59 | 2:16 | 1:58 | 2:17 | 1:49 | 10:19 |
| 35. | Woods, D. | Ireland | 1:50 | 1:38 | –:56 | 3:00 | 2:53 | 10:17 |
| 36. | Zigic, D. | Jugo. | 0:00 | 3:00 | 2:13 | 2:50 | 2:02 | 10:05 |
| 37. | Leppert, H. | Germany | 3:00 | 1:08 | 2:24 | 2:25 | 0:48 | 9:45 |
| 38. | Hoyer, E. | Austria | 2:43 | 1:43 | 2:38 | 1:50 | 0:00 | 8:54 |
| 39. | Baker, R. S. B. | Australia | 1:25 | 1:17 | 2:17 | 1:27 | 2:14 | 8:40 |
| 40. | Zapata, R. | Italy | 3:00 | 0:0 | 1:45 | 1:44 | 2:08 | 8:37 |
| 41. | Lippens, G. | Belgium | 1:35 | 1:34 | 1:28 | 1:44 | 2:03 | 8:24 |
| 42. | Hagel, R. | Sweden | 2:20 | 3:00 | 0:0 | 0:0 | 2:37 | 7:57 |
| 43. | Jeanne, L. | Belgium | 0:0 | 3:00 | 1:32 | 1:42 | 1:28 | 7:42 |
| 44. | Grunbaum, P. | Austria | 1:38 | 1:51 | 1:27 | 1:14 | 1:17 | 7:27 |
| 45. | Monti, F. | Italy | 1:21 | 1:34 | 1:08 | 1:39 | 1:27 | 7:09 |
| 46. | Gunic, B. | Jugo. | 1:27 | 0:0 | 2:38 | 3:00 | 0:0 | 7:05 |
| 47. | Kmoch, V. | Jugo. | –:33 | 3:00 | 0:0 | 1:22 | 1:43 | 6:38 |
| 48. | Lorimer, E. (G. French) | Canada | –:18 | 1:20 | 1:33 | 1:43 | 1:22 | 6:17 |
| 49. | Hamma, W. | Germany | 3:00 | 3:00 | 0:00 | — | — | 6:00 |
| 50. | Etherington, W. | Canada | 1:12 | 1:11 | 1:11 | 1:32 | 0:0 | 5:06 |
| 51. | Bacchi, R. | Italy | 3:00 | 0:24 | 0:00 | — | — | 3:24 |
| 52. | Maibach, F. | Switz. | 3:00 | 0:00 | 0:00 | 0:00 | 0:00 | 3:00 |
| 53. | Hartill, W. (N. Green) | U.S.A. | 2:23 | –:21 | 0:0 | 0:0 | 0:0 | 2:44 |
| 54. | Browne, D. | Ireland | 0:30 | — | — | — | — | –:30 |
| 55. | Bird, R. E. | Australia | — | — | — | — | — | — |
| 56. | Schiltknecht, P. | Switz. | — | — | — | — | — | — |
| 57. | Pimenoff, S. | Finland | — | — | — | — | — | — |

*Includes fly-off time.

### TEAM RESULTS FOR FRANJO KLUZ CUP

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | Great Britain | 2598 | 9. | Jugoslavia | | 1927 |
| 2. | U.S.A. | 2450 | 10. | Belgium | | 1931 |
| 3. | Holland | 2355 | 11. | Canada | | 1869 |
| 4. | Ireland | 2350 | 12. | Italy | | 1841 |
| 5. | Czechoslovakia | 2228 | 13. | Switzerland | | 1819 |
| 6. | Germany | 2205 | 14. | Sweden | | 1215 |
| 7. | Finland | 2003 | 15. | Japan | | 870 |
| 8. | Austria | 1994 | 16. | Australia | | 520 |




# CHANCE VOUGHT *Crusader*

## F8U-1


FEW companies have made a greater contribution to naval aircraft progress than have Chance Vought in advancing, in a single jump, from the F7U *Cutlass* to the F8U *Crusader*. Top speed of the F8U is over 1,000 m.p.h., making it the world's fastest carrier-based fighter.

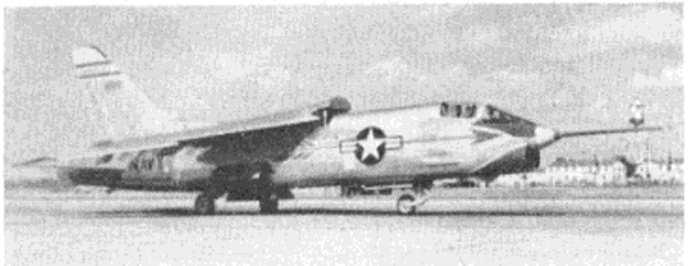
The *Crusader* looks, and is, a large aircraft, with a length of 50 ft. and span of 32 ft. 6 in.; but careful design has kept its loaded weight down to something over 22,000 lb. Power plant is the well-proven Pratt and Whitney J57-8-12 turbojet, giving probably 14,500 lb. thrust with the afterburner in use. Area rule ideas dictated the form of the chin air intake, which is claimed to give controlled stall-free airflow without the need for a variable inlet, and the pilot is seated well forward to give a superb view over the short nose. Titanium is used extensively in the centre and rear sections of the fuselage, which is a fairly typical parallel section supersonic structure, with variable-incidence tailplane.

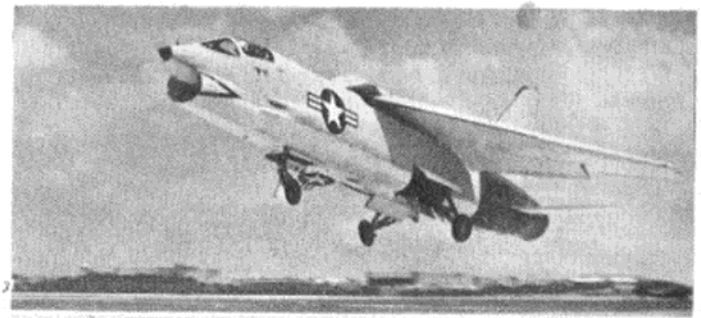
The wings are far from orthodox. When the *Crusader* was first announced in June, 1955, three months after its first flight, they were seen to be very thin (about 5 per cent. thickness/chord) with mid-span ailerons and full-span drooping leading-edges with the now-popular saw-tooth plan-form. Not for a year was it revealed that the wings can also be pivoted about the trailing edge to increase their angle of attack for take-off and landing.

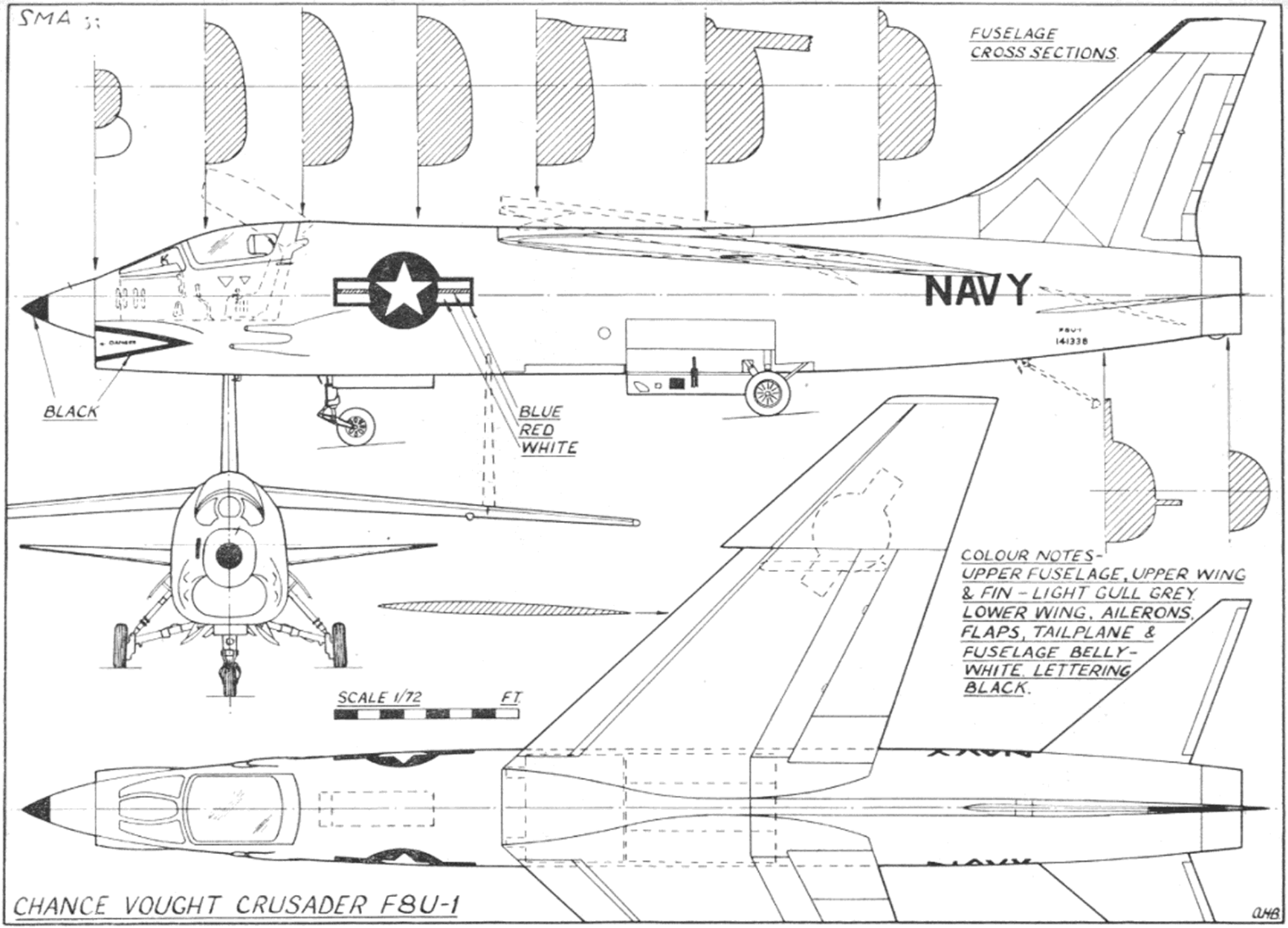
The importance of this two-position wing for carrier operations is well illustrated in the pictures on this page, which show the *Crusader's* take-off and landing attitudes compared with the *Cutlass*. By keeping the fuselage almost horizontal, whilst giving the angle of attack necessary for flight, it permits use of an extremely short undercarriage. This saves weight and makes all components easily accessible for servicing without the use of ladders and scaffolding.

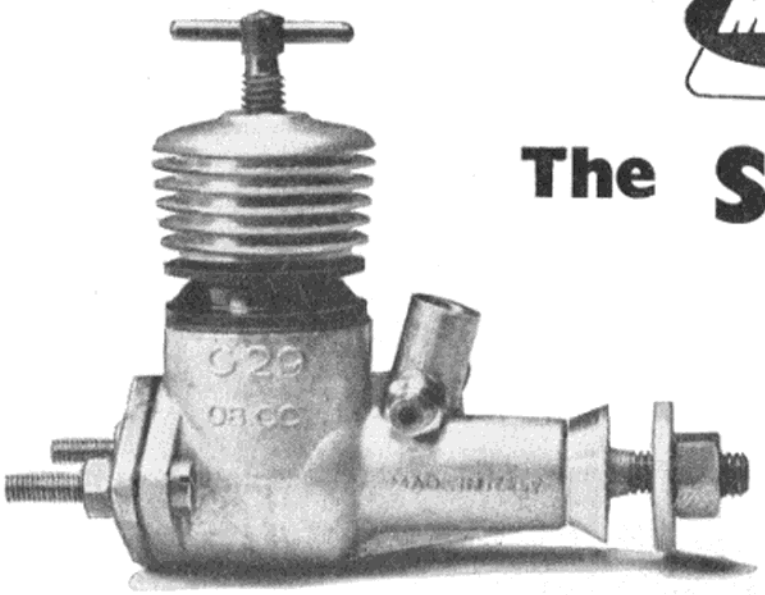
The U.S. Navy have no doubt of the quality of the *Crusader*. It was put into production only six months after its first flight, during which it exceeded Mach.1. Within seven more months, in April, 1956, the prototype completed its carrier qualification trials on the 76,000-ton supercarrier U.S.S. *Forrestal*.

**Difference between the Cutlass and Crusader is well shown in these photos.**




SMA
FUSELAGE
CROSS SECTIONS.
NAVY
141338
BLACK
BLUE
RED
WHITE
COLOUR NOTES-
UPPER FUSELAGE, UPPER WING
& FIN - LIGHT GULL GREY.
LOWER WING, AILERONS,
FLAPS, TAILPLANE &
FUSELAGE BELLY-
WHITE. LETTERING
BLACK.
SCALE 1/72
FT.
CHANCE VOUGHT CRUSADER F8U-1
QHB



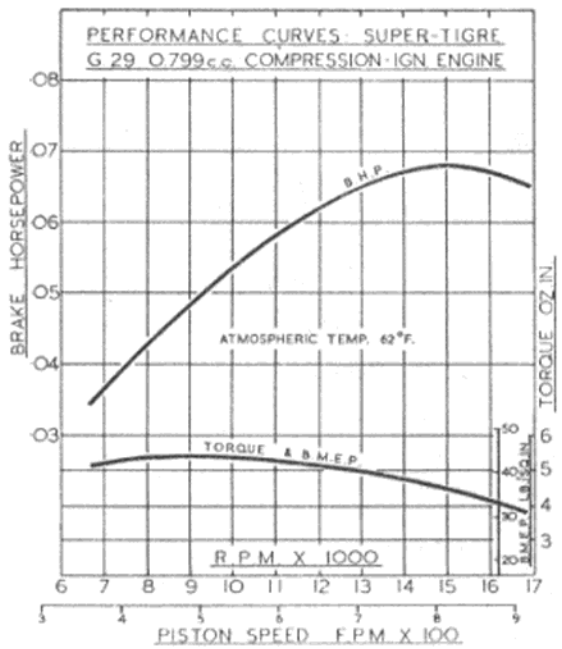
**ENGINE TESTS**

# The Super-Tigre G.29

## 0.799 c.c. diesel

***"one of the most powerful .049's currently available"***

IN the United States, by far the largest number of model engines produced annually are of the Half-A class—i.e. engines having a piston displacement of 0.05 cu. in. or less (approx. 0.8 c.c.). These motors, examples of which are made by nearly all the leading American model engine manufacturers, do, in fact, substantially exceed the total production of all other classes of model engines combined. One of the reasons for this is that not only are these sold in large numbers for normal model purposes, but they are also used by the toy industry to power certain types of ready-made products, including aircraft, boat and car models.




No such similar place for engines of this size and type exists outside the U.S.A., but it is also true that the introduction or evolution of specific types of models in the United States invariably arouses interest elsewhere and is subsequently followed by similar types in other countries. Thus, while we have no Half-A competition class in Britain, and although these 0.049 cu. in. engines do not conveniently fit into any recognised F.A.I. category the past couple of years or so have seen the introduction of a number of equivalent engines in Europe.*

In Germany, for example, the Webra-Piccolo made its appearance, followed by the Jaguar-Junior and the British Allbon Merlin. This latter is soon to be joined by another Half-A size motor from a noted British factory. Meanwhile, Italy's contribution is the Supre-Tigre G.29 and it is this motor that we have chosen for this month's test report.

In many respects the G.29 is one of the most impressive engines of this type yet to appear in Europe and also approaches more closely to the typical American layout. However, although a glowplug version is also listed, the G.29 is primarily a diesel and, as such, is one of the most powerful 0.049's currently available.

The makers, Micromeccanica Saturno of Bologna, are, of course, well known for the high standards, of both performance and construction, displayed by their engines and the G.29 proves to be no exception here.

With a bore of 11 mm. and a stroke of 8.5 mm., the G.29 has the lowest stroke/bore ratio of any Half-A engine currently available. A short stroke is frequently associated—not always justifiably—with high peak revolutions and compact dimensions, and this is one instance where this holds good. The G.29 is one of the fastest revving small diesels yet seen and is certainly one of the most compact.

Another feature of the design is the unusually heavy crankshaft, the journal of which is 6.5 mm. diameter. As a result of this and the very short stroke, the journal and crankpin have an overlap—as in some high-speed full-scale engines.

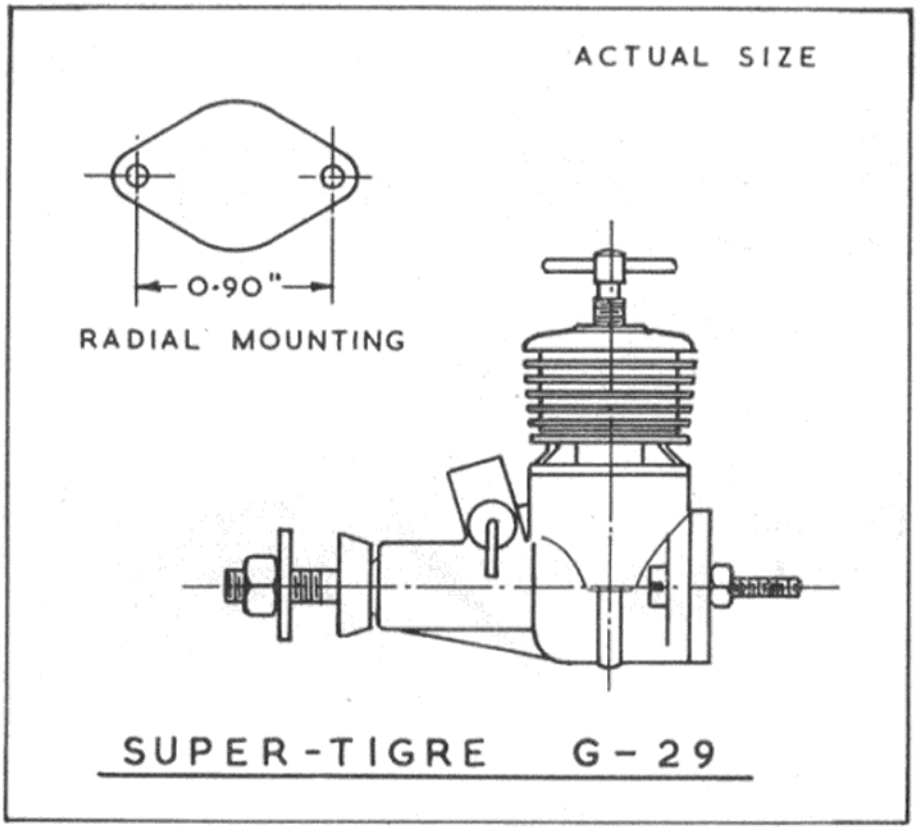
The engine is fairly conventional as regards the structural layout, having a one-piece diecast crankcase and main bearing, into which is screwed the cylinder liner, which, in turn, has screw-on cooling fins. However, the engine departs from the more common annular port systems. The crankcase interior, into which the lower section of the liner is screwed, is actually in three sections, forming three lands, and the

**It should be mentioned here that the well-established Mills 75 engine (0.045 cu. in.) actually preceded the Half-A models and although of a somewhat different type, is still of quite comparable performance.*

spaces between comprise the transfer passages. These open out into a narrow 360-degree chamber from which the mixture is admitted to the combustion chamber via two inclined and diametrically opposed transfer ports. Between and slightly above the latter are the exhaust ports.

Induction is, of course, via a shaft type rotary valve. The induction period is fairly moderate and there is no sub-piston supplementary air induction. A ball and socket type small end bearing, suspended from the piston crown, is used, in conjunction with a short, stiff connecting-rod machined from duralumin.

The engine is supplied without a fuel tank, but is sensibly provided with a combination spanner for use on the hexagon prop nut and the cylinder.




**Specification**

Type: Single-cylinder, air-cooled, two-stroke cycle, compression-ignition. Shaft type rotary valve induction. Reverse-flow scavenged cylinder with domed piston crown.

Swept volume: 0.799 c.c. (0.0488 cu. in.).

Bore: 11 mm. (0.4389 in.). Stroke: 8.5 mm. (0.3246 in.).

Compression ratio: variable.

Stroke/bore ratio: 0.799 : 1.

Weight: 1.65 oz.

**General Structural Data**

Pressure die-cast aluminium alloy crankcase and main bearing with detachable, flange-fitting rear cover. Screw-in cylinder liner of steel, hardened, ground and lapped and blued on non-working surfaces. Full disc crankshaft running in plain bearing and with alloy prop driver fitted on mating taper. Lapped steel piston with bronze ball-joint socket to connecting-rod. Connecting-rod machined from duralumin. Screw-on duralumin finned cylinder barrel. Brass spraybar type needle-valve assembly, reversible. Two-point bulkhead mounting.

**Test Engine Data**

Running time prior to test: 2 hours.

Fuel used: 40 per cent. technical ether BSS.579, 30 per cent. Shell Royal Standard Kerosene, 26 per cent. Castrol M, 4 per cent. amyl-nitrate.

**Performance**

Peaking at a shade over 15,000 r.p.m., where an output of 0.068 b.h.p. was obtained, the G.29 is essentially a high-speed engine which, like the numerous glowplug models in this displacement class, needs to be allowed to rev. if its best performance is to be realised. In other words, nothing larger than a 7 × 3 in. prop for F/F, or a 6 × 4 in. for C/L, are to be preferred.

It should be noted that the G.29 is entirely happy at these high speeds (i.e. static r.p.m. of around 13/14,000) and users need have no fear of undue wear and tear. The engine runs very smoothly and steadily at all speeds between 13,000 and 17,000 r.p.m. and, even at 18,000, due to the very short stroke, the mean piston velocity is still below 1,000 ft. per minute.

One would hesitate to classify the G.29 as a beginner's engine, but we found that it started fairly easily, both hot and cold. The controls worked well and held their settings at all speeds. Although a two-point bulkhead mounting, such as that used in the G.29, sometimes gives rise to serious vibration troubles with diesels, this was not the case with the Super-Tigre, the engine remaining remarkably free from vibration at all speeds—provided, of course, that the propellers were properly balanced.

On the torque reaction dynamometer, the maximum torque was found to lie between 8,000 and 10,000 r.p.m. The actual torque was not high (being equivalent to a b.m.e.p. of approximately 44 lb./sq. in.) but the torque curve is notably flat, the decline being only to the order of 17 per cent. over the 6,000 r.p.m. range between the peak of the torque curve and the peak b.h.p. speed.

A few days after completing these tests, a makers' leaflet was received from which it was noted that the manufacturers' claim for this engine is 0.070 b.h.p. at 15,000 r.p.m. It will be observed that our test results did, in fact, very closely approximate these figures.

Power/Weight Ratio (as tested): 0.66 b.h.p./lb.

Specific Output (as tested): 85 b.h.p./litre.

**Next Month's Engine Test will be of a Russian Motor—the MK. 12c. diesel**

# Wanderer 12

## AN ORIGINAL LIGHTWEIGHT OR A.2. GLIDER

## A High Performance Contest Model

BY J. BAGULEY

THIS is the 12th in a series of A2 gliders, the first of which was a 6 ft. long freak that came into existence in November, 1953. The models have gradually become more normal in the course of 2½ years but still retain an air of unorthodoxy, *viz.* the 4½ oz. of airframe, plus 10 oz. of ballast (of which 6 oz. is to bring it up to weight!).

*Wanderer* 12 could, therefore, be flown as a lightweight of 8½ oz., but this is not advisable, as the best flying weight works out at around 12-13 oz.

The main ideas on which this model is based are: (1) For quick stall recovery and "in a groove" flight pattern (laterally), an undercambered rather extreme tail section and weight concentrated about the c.g. are used.

(2) For "wandering" trim or directional instability and a safe straight tow, a minimum of side area coupled with moderate dihedral is used, also the tow hook in the extended position is very near to the c.g., which helps towing.

(3) Everything to be made simple with a pronounced lack of gadgetry so that all is reliable.

After earlier versions had been flown through most of the 1955 season, gaining 20th place in the Nationals (Thurston) and 27th place in the Trials, which is not too brilliant, some months were spent in thinking up this model. It was subsequently tested, and after very little trimming was timed in *calm evening* conditions for flights of between 2 min. 10 sec. and 2 min. 40 sec. on a full line length.

Assuming constant "lift" of up to ½ ft. sec., *still* air time can be taken as around 2 min. which it is suspected is only generally bettered by "extreme" continental A2's. The actual contest average for all versions of the *Wanderer* flown in 1955 and 1956 is 1 min. 57 sec.

### Wings

Try to keep the tips light and use harder, stronger wood for the centre section. Firstly, cut out the ribs using a ply template, and then put them together in a block to saw out the spar slots.

Next, build the centre section, leaving off the l.e. sheeting. Now block the centre section up to the required dihedral angle and build a tip on to it, and likewise for the other tip. Do not build each piece separately and then offer them up to each other as this will result in a weak dihedral joint and also warps.

Finally add the l.e. sheeting and then go over every joint and form cement gussets.

When sanding, remember to sand *across* the grain, or bowing will result, and use coarse sandpaper for the initial roughing of the leading and trailing edges.

Covering should be jap tissue or lightweight Modelspan with the grain running lengthwise, and give the equivalent of four full strength coats of dope in thinner coats, finishing up with a coat of thinners.

The tailplane should be kept as light as is reasonably possible, consistent with strength, and given the same doping and covering treatment as the wings.

### Fuselage

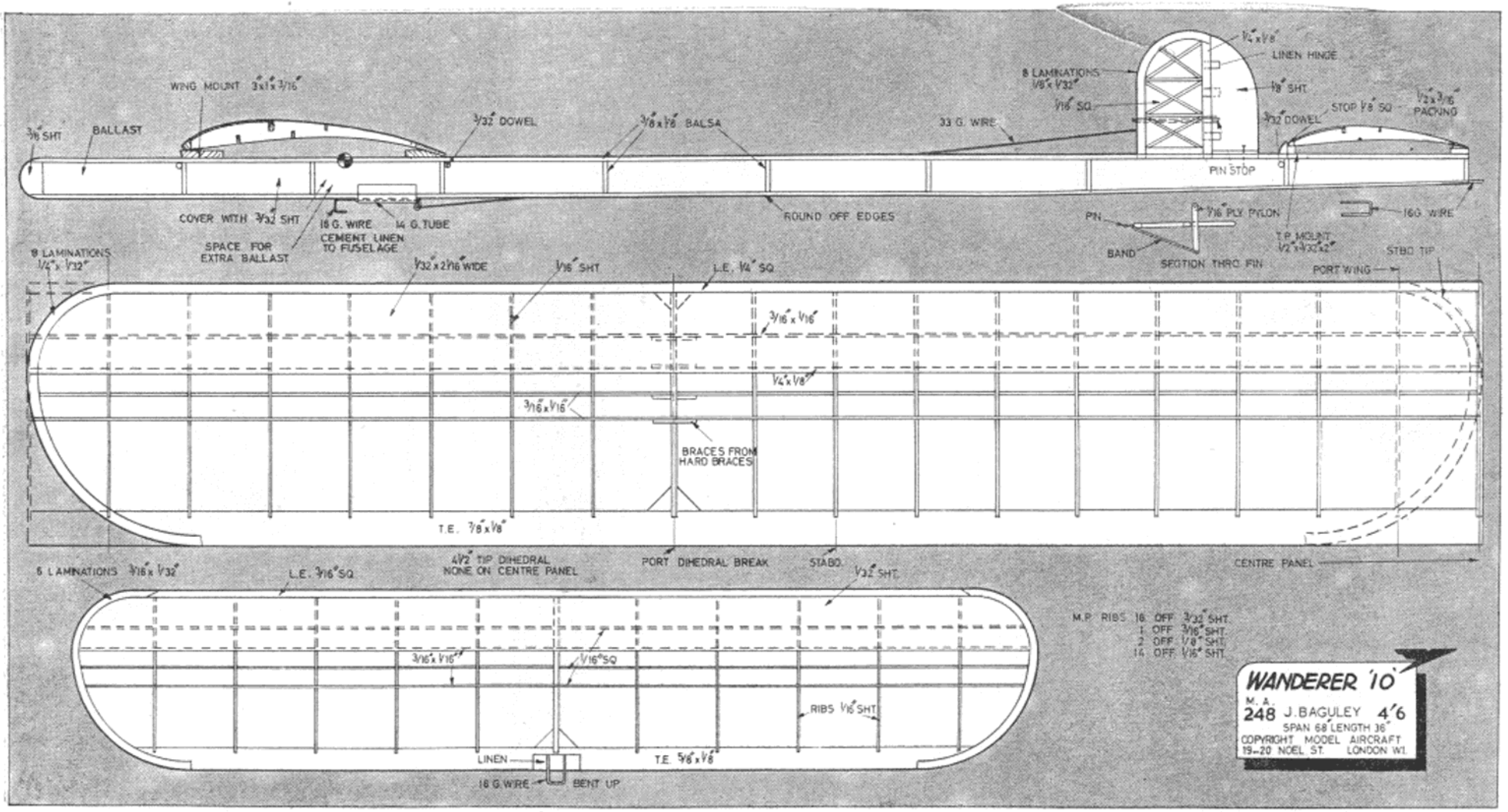
Use fairly hard wood which becomes softer at the tail end—if you can find it. Build and cover the fuselage before adding fin, wing and tail mounts, etc. Give three coats of full strength dope. Use thin wire for the auto rudder line and you should then have a waterproof model (thread shrinks). Finally, using the front weight box or boxes, bring the c.g. to the correct position. Then add weight to the boxes, which are under the wing, to bring the model up to specification, taking care to keep this extra ballast equally disposed about the c.g. The ballast should be molten lead poured into the weight boxes, which must be dampened (but not made too damp or steam may force the molten lead out in a violent manner).

### Trimming

First obtain a rough trim by test gliding, using 1/32 in. packing under the tailplane for any necessary adjustments.

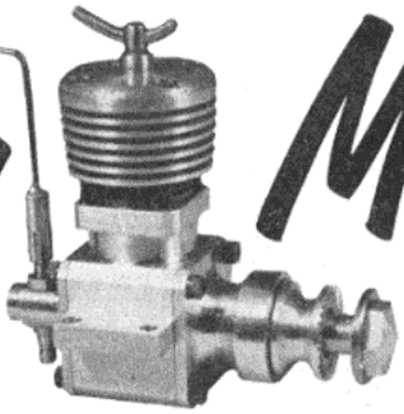
Next, using a short line with about 3/16 in. rudder offset, try a test flight; if all is satisfactory gradually bring the glide circle to about 100 ft. dia., then decrease tailplane incidence until a slight stall is apparent. Put the model away and wait for a breezy day with thermal activity and then take it up on a full line. This should result in a "wandering" trim with a general tendency to glide in about 150 ft. dia. circles, which will tighten up considerably if lift is encountered but may even result in opposite trim for short periods!

All that remains now is constant practice in towing into lift, and don't forget to use the d.t. for all flights.




**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, 4s. 6d., POST FREE**

# Mainly Motors



by PETER CHINN

EIGHT years ago, there appeared an engine which, although made in only a few thousands, was to gain considerable fame in its particular class. This was the Yulon glowplug motor, designed by Norman A. Long and built by his company, the Yulon Engineering Co., Birmingham.

We became acquainted with the Yulon quite early in its life, by reason of the fact that we were approached by Norman Long with a request to carry out tests on one of the first Yulon 30 models, to determine performance curves. The results of these tests were very encouraging and we were able to say so, subsequently, in MODEL AIRCRAFT, but full appreciation of the worth of the engine only came with its successes in competition. The Yulon was primarily a stunt motor and, as such, it proved virtually unassailable when ably handled and especially in the hands of people like Brian Hewitt, who twice won the premier British stunt award, the Gold Trophy, using a Yulon motor.

The original 30 was eventually superseded by the 29 model, supplemented by a larger bore 49 (8 c.c.) and the final development was the Eagle model of 1951. It must be admitted that these later models, which were substantially lower priced, did not succeed to the extent that the 30 had done, but this period was a particularly unhappy one for most British engine manufacturers. The failure to secure exemption from purchase tax, and the back-dated tax demands on manufacturers that followed, had a crippling effect on the industry, so that many makers, the Yulon company included, found it impracticable to continue production of model engines and were obliged to devote their manufacturing capacity to other, more profitable, spheres of precision engineering.

In the five years since that time, however, Norman Long never lost his interest in model engineering and, a few months ago, we learned that he was working on a new 2.5 c.c. engine. His aim was a simple one: an engine that would take its place in the van of this highly developed class. Price was to be of secondary importance, for the engine was to be for a strictly limited market, namely, those people prepared to pay for top quality and performance, and its design was not to be hampered by any considerations of production.

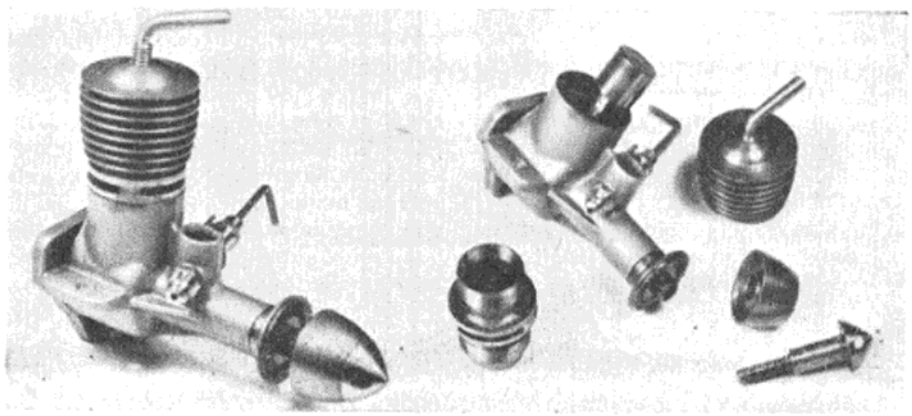
Just how far this has been achieved will be appreciated when we mention that this is the only engine in all respects comparable with the Oliver Tiger.

To make such a bold statement, involving two quite independent manufacturers would, undoubtedly, carry with it the risk of offending one side or the other, but for two reasons.

First, the Oliver has, for several years, been acknowledged as being in a class of its own, both in respect of performance and workmanship. No greater compliment, therefore, could possibly be paid to any new motor than to place it in the "Oliver Class."

Secondly, the demand for a motor of Oliver calibre far exceeds Oliver production. We have the greatest admiration for John Oliver who, despite this demand, refuses to introduce quantity production methods, which might bring with them the risk of a falling off in those jealously guarded standards which he sets for his engines. At the same time, this does mean that there is room for another high-quality small-production motor, especially as the market for engines of this type is not confined to Great Britain. Here, incidentally, we might mention that it was quite an eye-opener to be told by John Maloney of World Engines, the U.S. importers of the Tiger Mk. III, just how many more of these motors he could sell than he can get. We will resist the temptation to repeat his words and will merely mention that it was "many times" his present allocation. . . .

The new Long engine, like the Oliver Tiger, is a twin ball-bearing diesel, but its design and detailed structural arrangements bear little resemblance to the Oliver beyond this point. The motor is of the disc



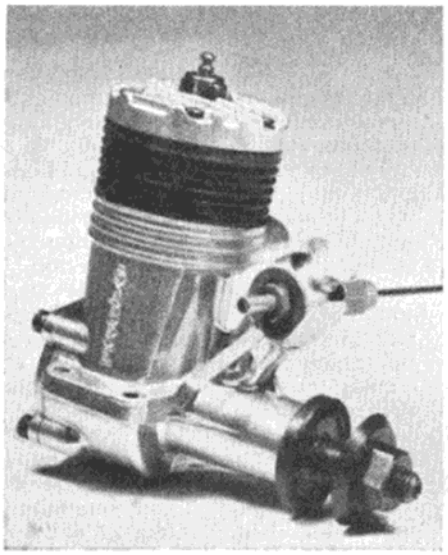
*Another M.A. first! Our heading photo this month is of Norman Long's new 2½ c.c. motor, which is here described for the first time.*

*(Left) From Germany. The Star 0.5 c.c. diesel, which is the first of a new range from this manufacturer.*

valve type and has a new variation on the popular radial port cylinder layout. The bore is 0.568 in. and stroke 0.600 in., giving a swept volume of 2.491 c.c. and a stroke/bore ratio of 1.056. It must be mentioned at this point that the production design may differ in detail from this test engine.

Basically, the bottom end consists of a machined alloy crankcase, into which are fitted front and back-plate assemblies carrying, respectively, the main bearing and the induction unit. These are positively located by bosses tightly fitted into the crankcase barrel, each being secured by four Allen screws. The front assembly houses two precision ball journal bearings carrying the S.11 steel crankshaft, which has a hard-chromed hollow crankpin.

The rear assembly incorporates a Tufnol valve rotor which is smoothly



*U.S. gadget on an Australian engine. The 5.8 c.c. Sabre 0.35 equipped with a Bramco throttle unit.*

chamfered. Due to the attention paid to the positive alignment of the three crankcase sections, the crankpin is allowed to fit firmly into the rotor, there being no backlash whatsoever. A fairly generous induction period of approximately 190 deg. is employed. Both faces of the crankcase barrel, incidentally, have lapped surfaces to give a metal-to-metal gas-tight joint.

The upper section of the crankcase is flanged and bored to locate the cylinder accurately in all directions. It, too, has a lapped face, with which the cylinder liner flange is mated, no gasket being used. A close fitting finned barrel slides over the upper section of the liner to unite the complete assembly, via four long Allen screws into the crankcase flange.

Exhaust porting is fairly conventional, consisting of four radial ports. Transfer porting is generous and unrestricted and consists of four rectangular section ports, steeply inclined (65 deg.) to the cylinder axis and entering the cylinder between the exhaust ports. Gas flow is assisted by the fact that the interior crankcase wall, immediately below the cylinder flange, is tapered at the same angle and registers perfectly with the ports themselves.

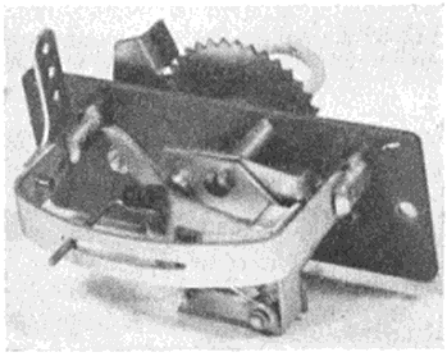
The cylinder liner material is Meehanite, while the piston is hard chrome on Meehanite. The connecting rod is machined from duralumin and has a tapered shank. It is equipped with oil grooves at both ends and is 1 1/32 in. between centres. The gudgeon pin is hard chrome on silver steel and is provided with brass end-pads. The piston crown is in the form of a flat-topped cone, while the contra-piston is fully coned.

The carburettor is of conventional design except for the fact that a narrow 45 deg. slot is used in place of the normal circular jet hole in the spraybar. This is combined with a blunt needle and means that the actual area of the jet orifice is altered to provide variations in mixture strength, rather than the system usual in spraybar design, which meters the fuel before it reaches the jet.

The drive to the airscrew is via a bobbin type extension hub on a tapered split collet and the prop is retained by a $\frac{5}{16}$ in. o.d. sleeve-nut.

It is not proposed to disclose the results we obtained on tests of the prototype Long engine at this stage, but, rather, to give a full test report on a production unit as soon as these are available. However, it may be mentioned that this is essentially a high-speed diesel in which the b.h.p. peaking speed approaches some 15,000 r.p.m. At the same time, the engine runs smoothly and produces much above average power at the lower speeds (where b.m.e.p. values of well over 60 lb./sq. in. were obtained) and can therefore be regarded as being equally suitable for the larger size props such as would be desirable with an R/C model.

One thing remains, and that is to name the new engine. When speaking on the telephone to Norman Long a few days ago (concerning the



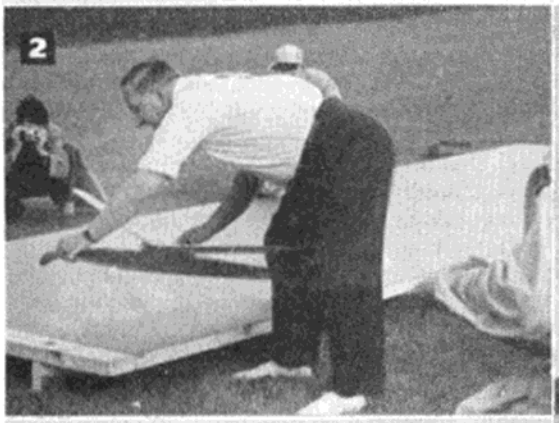
*Japanese variation on an American theme. The new O.S. compound escapement with built-in linkage for push-pull rod.*

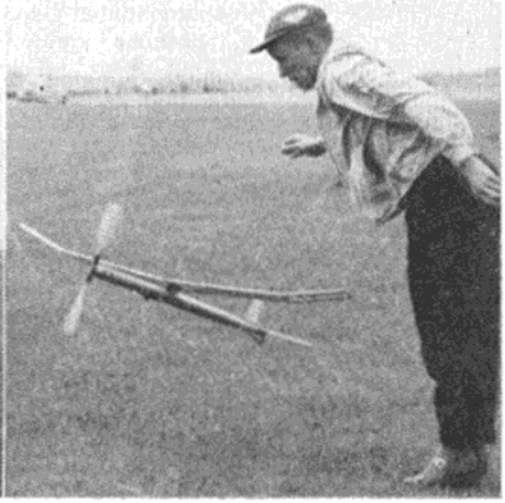
release of this report), we mentioned the need for giving it a decent name; Norman, who was just about to go off on holiday, said: " Look, I leave it to you. You name it. . . ." Which is all very nice, but names are important and the more we thought about it afterwards (especially when we contemplated the idea of having someone else name something of our own making) the less happy we felt about it. Once having mentioned it in print, too, it would be difficult to make any alteration. . . . And so . . . no name. We will tell you next month. By which time we also hope to give details of price and delivery.

. . . Readers may recall that, a few months ago, we commented in these columns on the rise of the 0.35 cu. in. glowplug engine and its present international popularity in the stunt and combat field. There are no glow 0.35's made in Britain at the

(*Continued on page* 374)

*Cuba. Some members of the very progressive Havana club at their flying ground, the Columbia Cuban Army A.F.B. L. to R. (standing) Oscar Jaime, Emilio Salazar, Julio Cesar Mas, Arturo Espinoza, Julian Gonzalez; (kneeling) Antonio Alvarado, Federico Campos.*



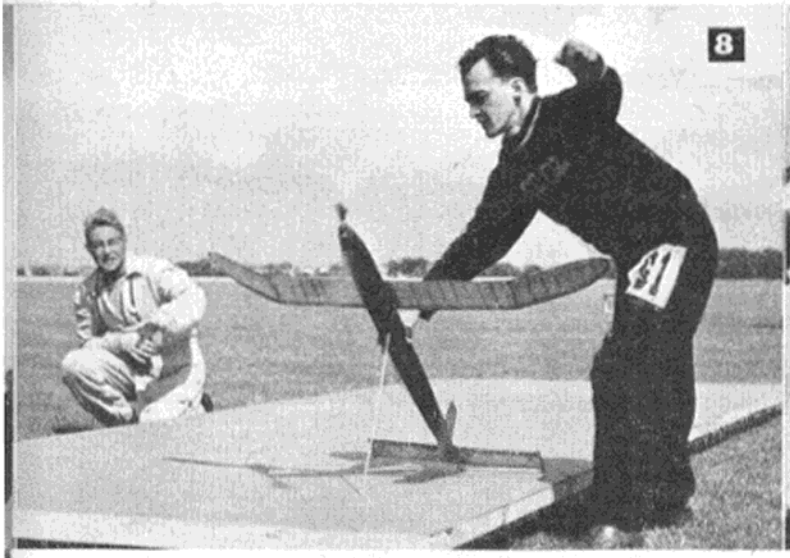
# The 195

A CONSTANTLY changing score-board up to the fifth and final round made the 1956 Wakefield Championship results an uncertainty to the last, both in the individual and team positions. When the final reckoning came, it was a double win for Sweden, with Russia taking second team place with a 1 sec. lead over Gt. Britain. In the individual results, John O'Donnell's total of 871 was only 8 sec. behind that of L. Petersson, the champion, and 3 sec. below American Herbert Koethe's time of 874, thus giving him third place, which he shared with Erik Knudser of Denmark.

Eighteen nations competed in the championships held at Hoganas, Sweden, making the meeting a truly international one. The British team of John and Hughie O'Donnell, Geof. Lefever, Bert Revell and team manager Bob Copland, arrived at Hoganas on the Friday afternoon. Also in the party were Malcolm Young, two Australians—Alan King and Bond Baker—and the writer.

Processing was scheduled for the Saturday morning and was held in the gymnasium of the school where the teams were accommodated. Most of the models were near the limits allowed by the rules ; one model did not conform and was duly modified. Italy wanted to be allowed two props for each of their models, while Guatemala protested about the three point take-off requirements; otherwise everything proceeded smoothly.

1. H. Dormann of Germany launches his slim, sheeted fuselage model.
2. Bert Revell disdains the use of the long board and takes off from the edge.
3. Team manager Bob Copland holds for Hugh O'Donnell on his 2nd flight.
4. The efficient recovery service about to go into action.
5. Statuesque pose in the rain is by S. Narminen of Finland.



# 6 WAKEFIELD—

## *a double for Sweden*

**REPORTED AND PHOTOGRAPHED BY ROY WESSON**

The contest briefing followed dinner on the Saturday evening, and the system of rounds was explained. The five rounds were each divided into two periods of 45 min.; two fliers from each team had to complete their flights in one of the periods. If a second attempt was necessary it had to be made in the same period.

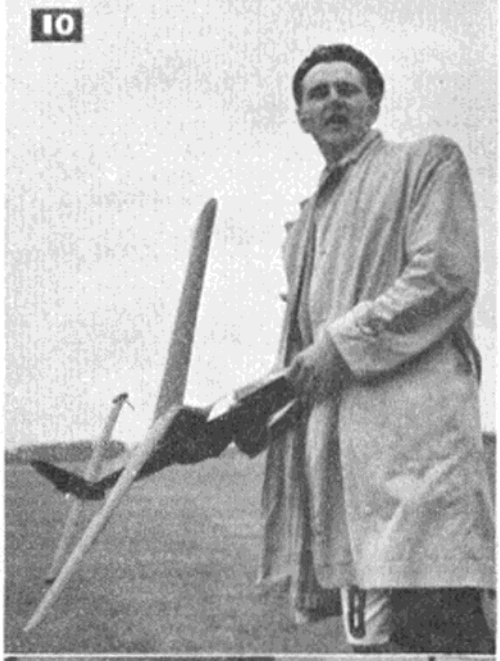
It was earlier understood that the Russian team would not, after all, be competing, but at the briefing it was confirmed that the team was on its way and expected to arrive in Hoganas at 1 a.m. on the Sunday morning ; the models would be processed immediately on arrival. It seemed, therefore, that the Russians would be handicapped before they even started flying ; just how wrong was this surmise was proved by later events !

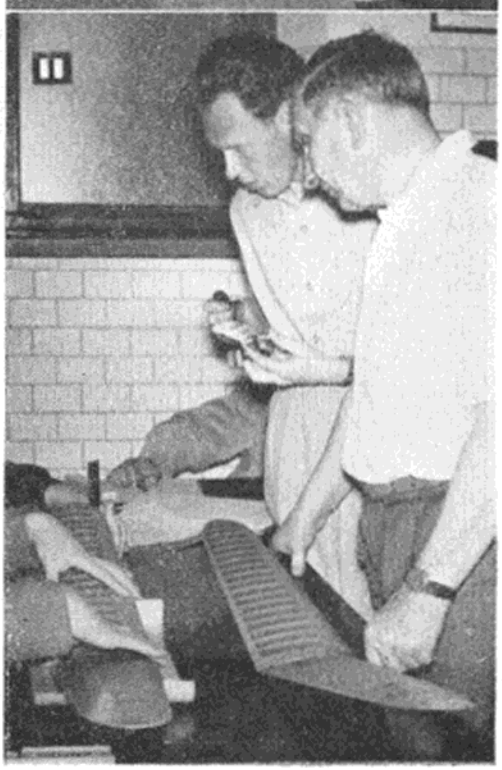
And so to Sunday and the contest. The morning was mild enough, although the wind was gusting between 25 and 30 m.p.h. First round started at 7.30 a.m. and we learned that the Russian team had already been out test flying !

Nine a.m., the end of the round, and 17 max's on the board—four of them scored by the Russian team ! John O'Donnell's model, after doing a max., ended up by flying into the side of a house ; he found it on a balcony, with two broken prop blades in the gutter below.

The Russians being such an unknown quantity in international flying, their four max's straight off the reel caused much speculation, even so early in the contest, and this with models which, at first appearance, would have been better suited to much milder conditions. Some type of reed was employed in the construction and this gave a highly resilient structure. The wings were of extremely thin section and had pronounced undercamber—and a flexibility that was almost frightening. This was brought home in a later round when one of these models took off, travelled about 5 ft., and then both wing tips flexed under and inwards, resulting in the inevitable prang.

If the first round was more or less uneventful, the second provided a variety of incidents which eventually were to affect the fortunes of those concerned. French team member Pierre Bluhm caused spectators to scatter when his model dived into the crowd, and broke the wing at the starboard dihedral joint—the result can be seen in Photo





**6. The winner, L. Petersson, en route for the take-off point.**

**7. Geof. Lefever is content to leave fuse checking in the safe hands of Bob Copland.**

**8. Russian team member E. Smirnov is closely watched by one of the official observers, whose duty was to ensure that all three points were on the ground for take-off.**

**9. Australian Bond Baker scored a max. just after this shot was taken, but damaged a wing on retrieving.**

**10. Anders Hakansson repeated his last year's second place by convincingly flying American Herbert Koethe's model into the same position this year.**

**11. British team member Bert Revell awaits his turn for processing.**

No. 4 on page 365. Alan King, the 1954 champion, was using the wing of his '54 winning model, and the fuselage and prop of his '55 job. It had the vicious take-off characteristic of doing a smart right turn on release, and in this round Alan gave a timekeeper a headache when the model piled into the Swede's head.

John O'Donnell, now flying his reserve model, went on to score another max, although he caused some apprehension when the model spiralled close to the ground, but it finally gained height. Brother Hughie dropped 3 sec. on his previous time, but both Bert Revell and Geof. Lefever bettered their previous times. The round ended with the Russians retaining their lead, with Gt. Britain coming into the picture at fourth place.

The third round was the last before the lunch break and the weather, although still dry, was obviously on the change. John O'D. had by now repaired his 2½-year-old first model, and further consolidated his position by scoring yet another max., although with him were four other fliers, including Koethe's model being beautifully proxy flown by Anders Hakansson, who won second place last year. At the end of round three, U.S.A. had jumped into first place, with Gt. Britain dropping to fifth.

The "occasional showers" forecast in the previous evening's met. report was a slight understatement, the rain being almost continuous for the remaining fourth and fifth rounds. As well as a change in the weather, the fourth round heralded a change in the fortunes of some of the fliers who, until then, had been well positioned on the scoreboard.

John O'Donnell's model appeared to run into a turbulent patch, and proceeded in a series of stalls at the end of its motor run, until it finally recovered. But this put paid to John's chances of a perfect score, his total for this flight being only 151. On retrieving, it was noticed that the prop was not folded correctly and this possibly was the cause of the trouble. Geof. Lefever found he had poor motor and his undercart also proved troublesome. Consequently, he had to make two attempts and for the second was using a motor loaned by John O'Donnell. On its second take-off the model gave the boys some anxious moments when it dived to within inches of the ground, but it recovered nicely and went on to score a max. Hughie O'Donnell scored his first max. in this round, but on recovery found his model damaged.

Really bad luck befell veteran Italian flier Guido Fea, who, having lost his first model earlier in the contest, now lost his reserve in this fourth round—this after scoring four max's—and neither model was found in time for the final round. Fourth round final scores showed the U.S. retaining the top position, with Sweden second and Gt. Britain third.

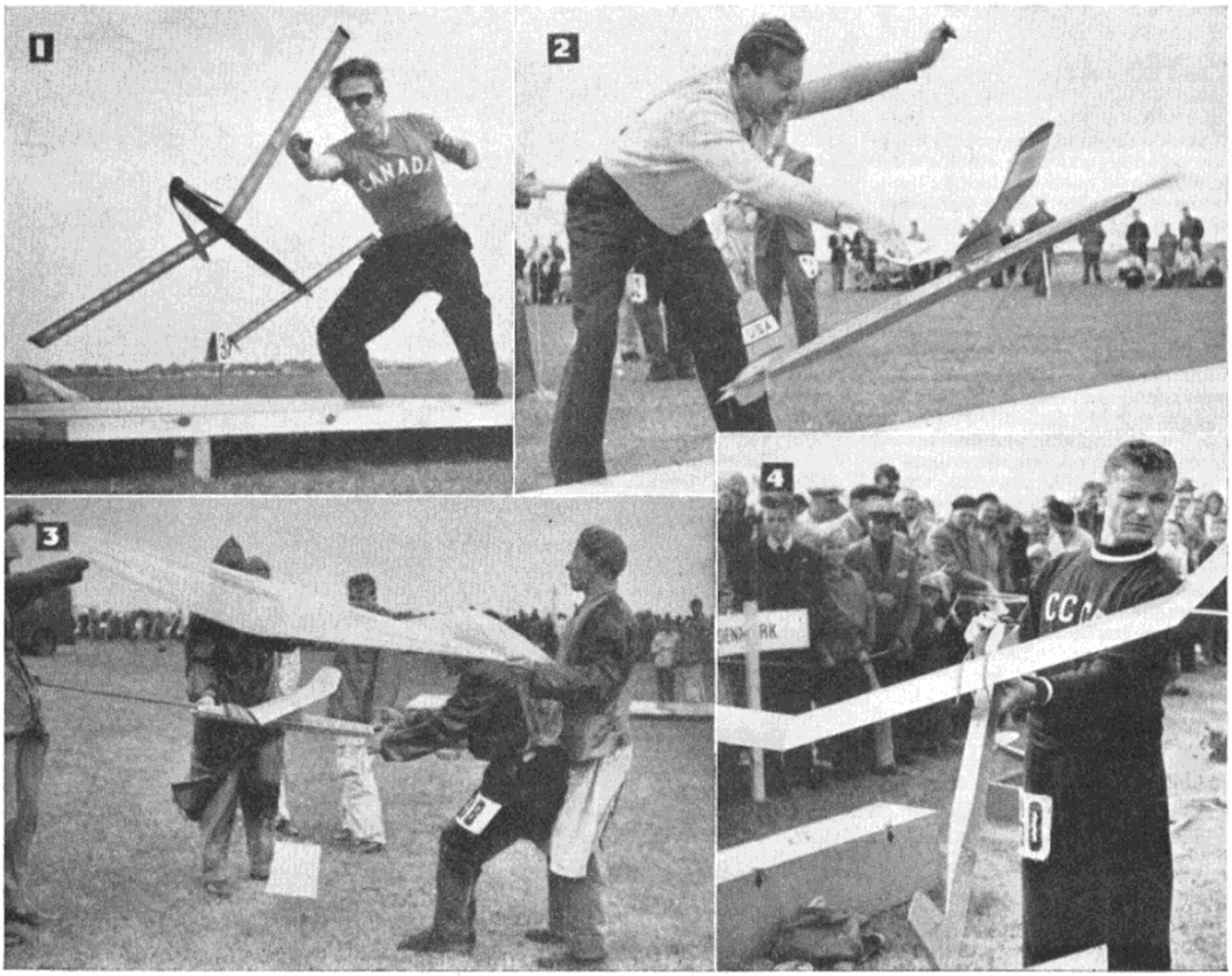
The opening of the fifth round saw no decrease in the downpour, although

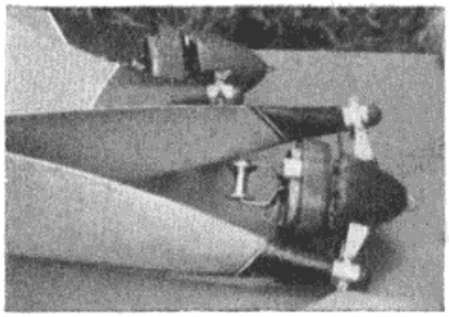
**1. G. Johansson, flying proxy for K. Groves of Canada, scores an attempt as his prop folds on release.**

**2. A. Blomgren looks happy about the take-off of Cliff Mountplaisir's (U.S.A.) model.**

**3. Typical scene during the afternoon, as the Italian boys do their best to shield the model in the downpour.**

**4. I. Ivannikov checks his model in the Russian enclosure between rounds.**





**Close-up of the beautifully made hardwood props used by the Russians.**

the British boys were fortunate in having a S.M.A.E. timekeeper's tent under which to keep their models dry.

Part of the O'Donnell brothers' "standard equipment" (apart from tent, primus stove, soldering gear, etc. !) is an umbrella, and this was put to good use in the final preparations. Hughie, flying his reserve model, made 173, landing in a tree near the school, where he left it for collection later. Geof. Lefever went one better : his model landed in the school playground after a 145 sec. flight, so he just took it into the billet and packed it away ! John O'Donnell had an uneventful flight, scoring another seemingly effortless max. Bert Revell, who made the last flight of the comp., broke the prop of his first model, which was 18 months old, when his undercart retracted rather too smartly, so out came his reserve for a flight of 125. In fact, Bert's model had not been attaining its usual height all through the contest, and also all the British team members had motor trouble at one time or another.

Obviously we cannot record every incident here, or even mention every country's endeavours ; rather we have placed the accent on the British team's efforts of which team manager Bob Copland—who did a magnificent job himself—can be proud. His vast experience was undoubtedly a great asset on the field, while his handling of the team in general was everything expected of a team manager. Malcolm Young, too, did excellent work assisting the team, and there was a splendid spirit of co-operation throughout the trip.

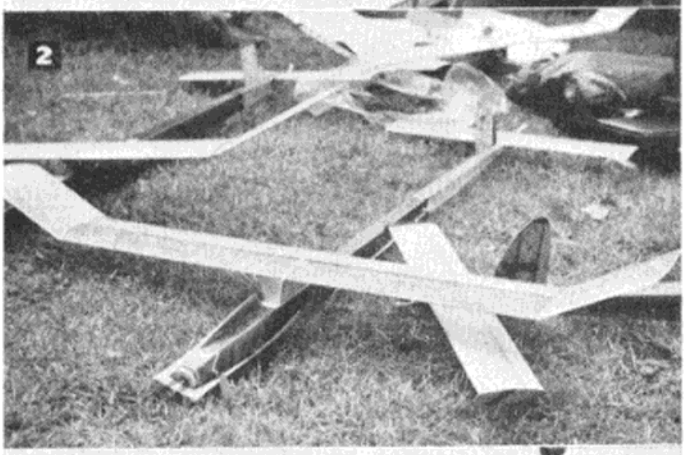
The meeting ended on the Sunday night with the prizegiving and a banquet on a grand scale.

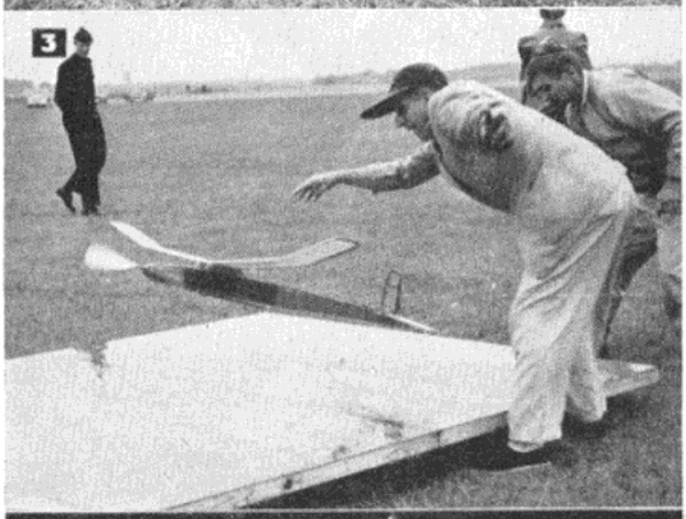






1. **V. Kolpakov lights up for his third flight.**
2. **J. Altmann of Germany did not repeat last year's performance, when he placed fourth.**
3. **The German team manager inspects the damage done by a broken motor to Dormann's model.**
4. **Marc Cheurlot of France holds Pierre, Bluhm's model while it is unwound after damaging a wing on take-off.**
5. **1954 World Champion Alan King of Australia acts as "stern" post for fellow countryman Bond Baker's model.**
6. **An equally forbidding expression is worn by John O'Donnell as he contemplates his model's chances in the 3rd round.**





## INDIVIDUAL RESULTS FOR THE WAKEFIELD CUP

| | | | 1. | 2. | 3. | 4. | 5. | Total |
|---|---|---|---|---|---|---|---|---|
| 1. | Petersson, L. | Sweden | 180 | 180 | 180 | 180 | 159 | 879 |
| 2. | Kothe, H. (P) A. Hakansson | U.S.A. | 180 | 180 | 180 | 180 | 154 | 874 |
| 3. | O'Donnell, John | Gt. Britain | 180 | 180 | 180 | 151 | 180 | 871 |
| 3. | Knudser, Erik | Denmark | 180 | 166 | 180 | 165 | 180 | 871 |
| 5. | Smirnov, E. | Russia | 180 | 163 | 167 | 160 | 180 | 850 |
| 6. | O'Donnell, H. | Gt. Britain | 178 | 175 | 142 | 180 | 173 | 848 |
| 7. | Ahman, R. | Sweden | 135 | 154 | 180 | 180 | 180 | 829 |
| 8. | Ivannikov, I. | Russia | 180 | 180 | 180 | 131 | 140 | 811 |
| 9. | Kolpakov, V. | Russia | 180 | 143 | 126 | 180 | 180 | 809 |
| 10. | Hyvarinen, R. | Finland | 166 | 180 | 172 | 132 | 158 | 808 |
| 11. | Smolders, J. | Holland | 177 | 165 | 155 | 160 | 147 | 804 |
| 12. | Haag, R. | Sweden | 180 | 141 | 145 | 180 | 155 | 801 |
| 13. | Kolb, J. | U.S.A. | 180 | 180 | 110 | 163 | 155 | 788 |
| 14. | Scardicchio, V. | Italy | 180 | 180 | 127 | 180 | 118 | 785 |
| 15. | Montplaisir, C. (P) A. Blomgren | U.S.A. | 139 | 180 | 180 | 180 | 103 | 782 |
| 16. | Cizek, R. | Czech. | 180 | 171 | 176 | 103 | 136 | 766 |
| 17. | Lefever, G. J. | Gt. Britain | 98 | 180 | 147 | 180 | 145 | 750 |
| 18. | Alinari, A. | Italy | 156 | 180 | 111 | 130 | 146 | 723 |
| 19. | Giudici, G. | France | 132 | 180 | 126 | 116 | 168 | 722 |
| 20. | Fea, G. | Italy | 180 | 180 | 180 | 180 | — | 720 |
| 21. | Hertsch, K. | Germany | 180 | 180 | 99 | 118 | 133 | 710 |
| 22. | Guilloteau, R. | France | 132 | 177 | 100 | 125 | 171 | 705 |
| 23. | Sorensen, N. | Denmark | 149 | 180 | 111 | 130 | 124 | 694 |
| 24. | Altmann, J. | Germany | 180 | 142 | 180 | 161 | 25 | 688 |
| 25. | Hamalainen, E. | Finland | 150 | 144 | 145 | 126 | 110 | 675 |
| 26. | Dormann, H. | Germany | 159 | 147 | 107 | 128 | 128 | 669 |
| 27. | Cassi, G. | Italy | 151 | 178 | 89 | 87 | 159 | 664 |
| 28. | Molbach, T. | Norway | 100 | 180 | 134 | 131 | 98 | 643 |
| 29. | Nienstedt, E. | Denmark | 149 | 130 | — | 180 | 180 | 639 |
| 30. | Hemola, J. | Czech. | 146 | 69 | 124 | 180 | 109 | 628 |
| 31. | Coughlin, G. | U.S.A. | 158 | 127 | 112 | 137 | 93 | 627 |
| 32. | Heidmuller, B. (P) G. Behrens | Germany | 150 | 129 | 54 | 180 | 100 | 613 |
| 33. | Coates, F. (P) C. Moberg | Canada | 89 | 156 | 180 | 180 | — | 605 |
| 34. | Revell, H. | Gt. Britain | 141 | 147 | 91 | 104 | 121 | 604 |
| 35. | Bausch, L. | Holland | 110 | 133 | 134 | 139 | 87 | 603 |
| 36. | Matveev, V. | Russia | 180 | 180 | — | 180 | — | 540 |
| 37. | Wong, D. (P) L. Andersson | N. Zealand | 99 | 180 | 120 | 82 | 37 | 518 |
| 38. | Takko, S. | Finland | 93 | 153 | 141 | 130 | — | 517 |
| 39. | Lifka, L. | Czech. | 145 | 125 | 88 | 88 | 69 | 515 |
| 40. | Bluhm, P. | France | — | 102 | 134 | 107 | 149 | 492 |
| 41. | Knoos, S. | Sweden | 165 | 144 | 114 | 58 | — | 481 |
| 42. | Burger, C. | Holland | 132 | 103 | 120 | — | 118 | 473 |
| 42. | Bobkowski, A. | Guatemala | 126 | 180 | 167 | — | — | 473 |
| 44. | Nurminen, S. | Finland | 44 | 151 | 113 | 93 | 67 | 468 |
| 45. | Heesemans, R. | Holland | 122 | 107 | 60 | 39 | 136 | 464 |
| 46. | Widell, K. E. | Denmark | 161 | 75 | 169 | 45 | — | 450 |
| 47. | Nonaka, Y. (P) N. Hollander | Japan | 137 | 94 | 121 | 23 | 58 | 433 |
| 48. | Alfare, A. (P) C. Sunstedt | Guatemala | 33 | 117 | 121 | 150 | — | 421 |
| 49. | Mackenzie, D. (P) L. Hansson | Canada | 132 | — | 145 | 127 | — | 404 |
| 50. | Popelar, V. | Czech. | 158 | — | — | 89 | 140 | 387 |
| 51. | Viggiano, O. (P) C. Haag | Argentine | 40 | 167 | 162 | — | — | 369 |
| 52. | Baker, B. | Australia | 180 | — | 159 | — | — | 339 |
| 53. | Gordon, R. (P) M. Blomquist | Canada | 180 | 139 | — | — | — | 319 |
| 54. | Nonaka, S. (P) R. Johansson | Japan | 143 | 92 | — | — | — | 235 |
| 55. | Leong, A. (P) H. Schmiterlow | N. Zealand | 93 | 85 | — | — | — | 178 |
| 56. | Groves, K. (P) G. Johansson | Canada | 68 | — | 78 | — | — | 146 |
| 57. | Heiret, J. | Norway | 86 | — | — | — | — | 86 |
| 58. | Macaulay, A. (P) B. Blomberg | New Zealand | — | — | 23 | — | — | 23 |

(P) indicates proxy flown

## TEAM RESULTS FOR THE F.M.A. CUP

| | | | | | |
|---|---|---|---|---|---|
| 1. Sweden | 2509 | 7. Germany | 2067 | 13. Guatemala | 894 |
| 2. Russia | 2470 | 8. Finland | 2000 | 14. Norway | 729 |
| 3. Gt. Britain | 2469 | 9. France | 1919 | 15. New Zealand | 724 |
| 4. U.S.A. | 2444 | 10. Czechoslovakia | 1909 | 16. Japan | 668 |
| 5. Italy | 2228 | 11. Holland | 1880 | 17. Argentine | 369 |
| 6. Denmark | 2204 | 12. Canada | 1328 | 18. Australia | 339 |

1. **Geof. Lefever gets away to score 145 in the rain on his last flight.**

2. **Months of painstaking work have gone into this Russian machine, shown here in the paddock.**

3. **Jerry Kolb, watched by team mate Gil Coughlin, makes his last launch in heavy rain.**

4. **Petersson holds the cup, flanked by Hakansson on his right, with Erik Knudser on his left, who shared third place with John O'Donnell.**

## A. F. HOULBERG . . . . . describes some

# *Technical Aspects of the Wakefield*

THE 1956 World Championships for Wakefield Models has not succeeded in producing any outstanding innovations, although certain design trends stand out quite clearly.

The first of these is a distinct leaning towards the ultra-long fuselage of small cross section; the other is the almost complete disappearance of the " return " type rubber motor which has been in considerable favour the past few years.

The only real departure from orthodox practice was to be found in the construction of the Russian models, which were built very extensively from a native reed, for which the Russian interpreter could not find an English equivalent. In appearance it is not unlike a dark coloured straw, but it obviously has considerable strength compared with any similar material obtainable in this country. Although this material is satisfactory and produces a strong and light structure, it has a drawback in that it is difficult to join, and according to the interpreter it takes the Russian modellers 12 months to construct a model.

No balsa whatever is used in their construction, the propellers being carved from lime blank, and it would appear that a similar wood is used for main-spars and longerons.

A further feature of the Russian models was the closely spaced, almost geodetic, diagonal rib structure of the supporting surfaces, which were of extremely thin section, with a very pronounced under-camber to the wing. In general design, however, they did not greatly differ from the other entries.

It was noticed that, in some cases, they were making use of round section rubber, approximately 3/32 in. in diameter, but in others they were using the orthodox flat strip. Under the conditions which prevailed during the contest it was not possible to detect if there was any advantage in the round rubber from a performance point of view.

The use of long, small-sectioned, fuselages has shown an increase in the number of planked fuselages and a marked increase in the number of circular sectioned fuselages made from balsa sheet. Most of the tubular and planked fuselages are without formers or with only one or two at points of vital stress, with additional thickening at the nose block.

Several examples of semi-planked square sectioned fuselages were in evidence—some with the sides only and others with the top and bottom only. In many cases the unplanked sides were stiffened by the use of cross-struts in the Warren Girder disposition.

Wing design showed more variety and plan forms were about equally divided between square tips and elliptical or semi-circular tips. Most of the entrants favoured multi-spar construction using four, six or even more, spars. Where fewer spars were in use (1 or 2) intermediate nose ribs or nose planking was generally evident.

The only departure from normal plan form was the model entered by R. Guilloteau, of France, who used a " Gull " wing, in conjunction with an ultra-long fuselage and a small " V " tail.

Turbulators were less in evidence but the Czechoslovakian team were using them on all their models. These consisted of a thick thread cemented 5 mm. from the leading edge for its whole length. In conversation with them they made no claim for any better duration by their use, but said they used them because they found that they imparted better longitudinal stability to the models and reduced any tendency to stall.

Various anti-warp constructions were in use, from the close mesh diagonal system favoured by the Russians to the planked leading edge. In view of the bad conditions which existed during the contest there is no doubt that anti-warp construction paid dividends in cases where it was used, since nearly all of the crashes which took place were obviously due to wing distortion.

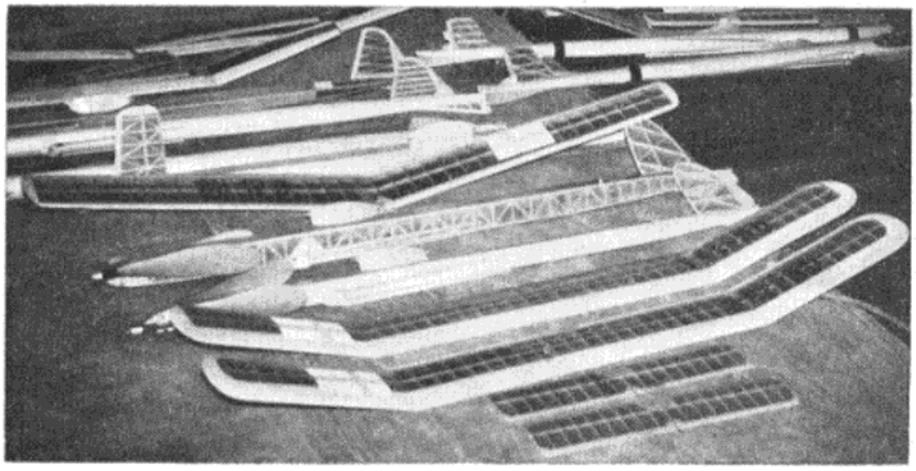
Twin bladed folding propellers were almost universal, although single bladed propellers were favoured by the French team and one of the Danish entries was observed to be using a non-folding free-wheeling example.

Of undercarriages the less said the better. Aeromodellists the world over insist in dodging the issue and few of the devices used could really live up to the name. Although no vertical take-offs were attempted there were many at approximately 45 deg. and there were still too many instances of assisted take-off.

In view of the present farcical state of the undercarriage position, the sooner we re-introduce the hand-launch the better.

**Below: Marc Cheurlot fits the nose block on his interesting gull wing model.**

**Right: The Russian team manager critically surveys one of the models in the enclosure. Below: The Finnish models all ready for processing. Note the all-balsa circular fuselages.**

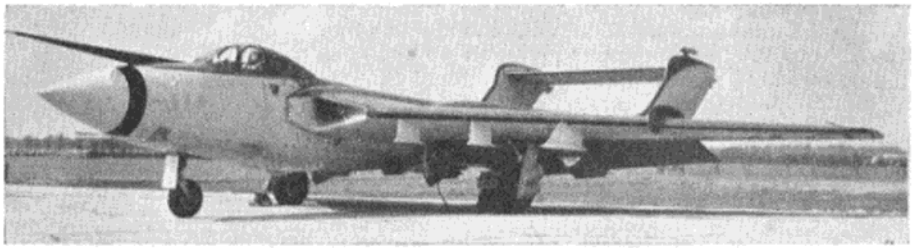


# Aviation NEWSPAGE

## by J. W. R. Taylor

Even B.E.A.'s **MUCH-LABELLED FLEET** does not usually contain aircraft with such a mixture of markings as the second prototype *Bristol* 173 twin-engined helicopter which the Corporation has taken over for extensive handling trials.

In contrast with the military-style serial XH379 and roundels on its rear fuselage, it has the initials B.E.A. under the cabin, above the passenger door and twice more of each side, the Corporation's name in full on each side of the customary white top, plus a pair of Union Jacks on its rear pylon and the standardised shield-and-class panels from which it is seen to be "Sir Bors" of the King Arthur Class. (Heading photo.)



Anybody long-whiskered enough to remember the pre-war film in which that great comedian and airman, Will Rogers, played *The Yankee at King Arthur's Court* will remember that he, too, was knighted as "Sir Boss"—pronounced "Bors"!

* * *

The **TAILLESS F-86** below also carries some odd markings on its fin and wings, obliterating most of the roundels that identify it as an Orenda - engined Canadair - built *Sabre* of the R.C.A.F. Only temporary, they were painted on to speed identification during a major NATO air exercise in which the R.C.A.F.'s 12 Europe-based *Sabre* squadrons played a leading part. This particular aircraft was photographed during an engine check at an outdoor maintenance area of Frescati Airport, Metz, in France.

* * *

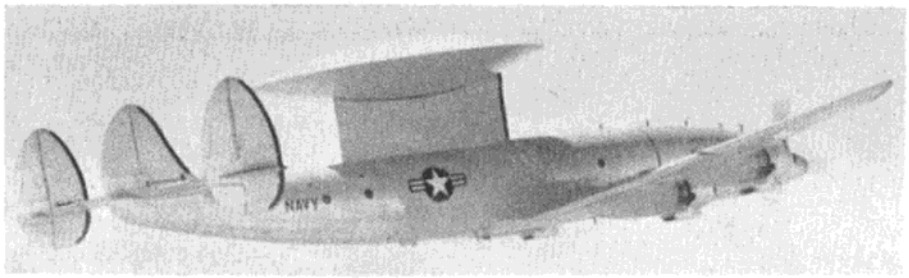
Let's not forget to raise a cheer in MODEL AIRCRAFT to mark the **COMET'S COME-BACK.** Capital Airlines' order for four long-range Series 4 and 10 medium-range Series 4A *Comets* should do much to restore confidence in what is still the only jet transport with the experience of 30,000 hours of airline flying—as well as an immense amount of research and structural testing—built into it.

With its ability to carry 70-92 passengers on stage lengths up to 2,000 miles, cruising at 545 m.p.h. and requiring no costly runway extensions for safe operation, the *Comet* 4A should be unbeatable on most of the world's air routes. What's more, it is scheduled to enter service before any U.S. jet-liner. With clipped wings and stretched fuselage, it will span 107 ft. 9½ in. and have a length of 114 ft. 10 in.

* * *

**CHEERS, TOO,** for Saro's little two-seat *Skeeter* helicopter, now chosen as the Army's first rotating-wing air observation post. Designated A.O.P.Mk.10 (with T.Mk.11 allocated to cover an R.A.F. training version), the production machines will be similar to the *Skeeter* 6 prototype which has put so much pep into the helicopter circus at the S.B.A.C. Display for the last two years with its superb manoeuvrability and high

*Above: The D.H.110 gets a new look with its pointed radome nose and other mods. Below left: Engine check on an F-86. Right: Saro Skeeter in Army colours.*



rate-of-climb. For the record, the A.O.P. 10 will be powered by a 200 h.p. Gipsy Major 201 engine, giving a cruising speed of 99 m.p.h. and range of 237 miles with 16 gal. of fuel, at a normal loaded weight of 2,150 lb.

* * *

**MORE ODD MODS** have changed the appearance of the D.H.110 and WV-2 *Super Constellation* illustrated above.

Like the *Javelin*, the D.H.110 now has a pointed fibreglass nose radome which is said to withstand the sandpaper effects of flying through heavy rain better than the previous rounded type. Pylons under the wings are for assorted missiles and fuel tanks; the massive bowsprit above the nose is merely a temporary mounting for a yawmeter.

Although it looks like a mother-plane for a flying saucer, the *Super Connie* is in fact wearing the latest style in early warning radar equipment devised by the U.S. Navy to supersede the usual under-fuselage "guppy" scanner. Measuring more than 30 ft. in diameter, the installation was first tested during high-speed taxying to study the effect on take-off performance, stability and control. Flight tests have taken place during the past few weeks.

* * *

The **NEW LUFTWAFFE** is now expected to order 11 *Skeeters* under the equipment programme authorised by the Federal German Government. Orders so far announced for other British aircraft for German Air and Naval Forces include 68 *Sea Hawks*, 16 *Gannets* and an unspecified number of *Sycamores*, to which are due to be added 33 *Pembrokes*.

For its front-line fighter defences the Luftwaffe has asked for 380 F-100D *Super Sabres* and 226 Fiat-North American F-86K all-weather interceptors. A total of 137 French and German-built Nord *Noratlas* transports will equip its heavy transport squadrons; 428 Dornier Do 27's will be used for reconnaissance; and 265 Piaggio P.149's and 383 Fouga *Magisters*, mostly German-built, for training. The result will be one of the most modern and well-balanced air forces in the world totalling, with miscellaneous types, 2,121 aircraft.

* * *

While Bell's **HEAT BARRIER HOT-ROD,** the swept wing X-2, has been hitting speeds reportedly as high as 1,900 m.p.h., the second of the original short-fuselage X-1 prototypes has got itself a new pair of thin straight wings, a *Skyrocket*-type of knife-edge windscreen and other mods that are expected to take it beyond the famous 1,650 m.p.h. "record" of the X-1A.

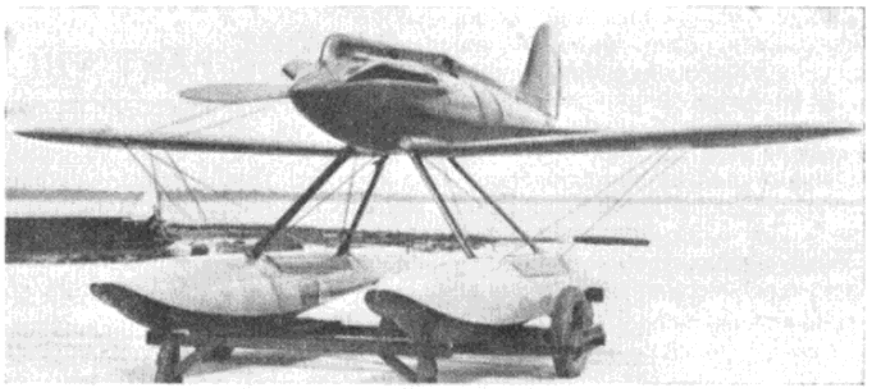
Designed and built by Stanley Aviation Corporation, the new wings have a thickness/chord ratio of only 4 per cent., compared with the original 10 per cent. section, and the liquid oxygen and alcohol propellants are now fed into the four rocket chambers by a turbo pump instead of by nitrogen under pressure.

Redesignated X-1E, the modified aircraft is being flown by research test pilots of the National Advisory Committee for Aeronautics at Edwards Air Force Base, California.

* * *

Watch for **EX-R.A.F. CHIPMUNKS** entering service with local flying clubs. Large numbers are surplus following changes in R.A.F. training and reserves policy. Unfortunately, the cost of conversion to civil standards is fairly high, but Surrey Flying Club, at Croydon Airport, have bought one, registered G-AOTG, and will offer it for dual or solo flying at £4 10s. an hour It will bring the S.F.C. fleet up to 12 aircraft, including seven *Tigers*, two *Hornet Moths*, one *Leopard Moth* and a *Messenger*.

## FROM THE PAST . . . . . No. 5

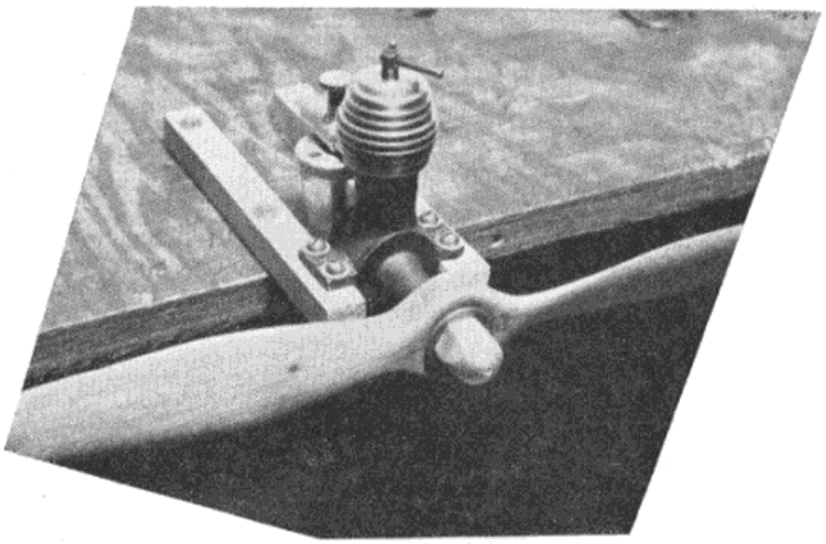


# The Gloster VI

GOLDEN ARROW of 27 years ago was the *Gloster VI* racing seaplane, which had bronze-coloured wings and tail, Cambridge blue fuselage and white floats and struts. Two were built for the 1929 Schneider Trophy contest, numbered N249-250. They were Gloster's first monoplanes and certainly the loveliest aircraft of their day, being smaller and more perfectly streamlined than even Mitchell's *Supermarine* S.6. Construction was mixed, with duralumin monocoque fuselage and floats, and a six-spar wooden wing, the thickness of which increased from the root outboard to where the bracing wires were attached. Practically the whole wing was covered with radiators made of thin flat brass tubes laid side-by-side and sweated together to give a smooth surface.

Power plant was a supercharged Napier Lion VIID, which packed 1,320 h.p. into a space less than 3 x 3 x 6 ft., with its twelve cylinders in three rows of four. Unfortunately, it was not fully developed in time for the 1929 contest and the *Golden Arrows* were grounded by blower and carburetter troubles. They had a brief moment of glory a few days later when Flt. Lt. Stainforth achieved an average of 336.5 m.p.h. over a 3-km. course in an attempt on the world speed record, which then stood at 318.46 m.p.h. But immediately afterwards Sq. Ldr. Orlebar raised the record to 357.6 m.p.h. in the S.6. The *Golden Arrow* could not hope to beat this with only two-thirds the power of the S.6's Rolls-Royce "R" engine, but later it did 351.6 m.p.h.

# Your first Engine



The NEW M.A. BEGINNERS' COURSE PART VIII

A FEW years ago, power modelling was very definitely for experts only and would have been quite outside the scope of this series—at least at this stage. The coming of small diesel and glowplug engines in the late nineteen-forties and of small, simple C/L models, however, altered all this. Nowadays, in fact, it is quite permissible (if not always financially practicable!) for the young beginner to start his modelling career with an engine-driven model.

Model aircraft engines manufactured today are nearly all of either the diesel or glowplug type. The advantage here is that there is no high-tension ignition system to go wrong, both types of engines operating by simple auto-ignition system. In general, modern model engines are easy to run, maintain and are very reliable.

It should not be assumed from this, however, that every model engine is suitable for the newcomer to power flying. This is far from the case. The hard school of contest flying has resulted in the development of engines of increasingly greater performance and many of these are too powerful, too big, too expensive or too tricky for the beginner to handle successfully.

Obviously, the newcomer to power modelling requires an engine that is easy to start and of a performance suitable for the types of models he will be building. Fortunately, there are many such motors.

In Fig. 1 is shown a selection of engines from many parts of the world. Six of them are diesels and six are glowplug models, and they come from six different countries: Great Britain, the U.S.A., Germany, Italy, Norway and Japan. It is fairly certain that, no matter what part of the world you reside in, you will be able to obtain at least one of these, for most of them are also exported to many other lands, including those countries which do not have their own model industries. British modellers should note, however, that foreign model motors are not at present generally available in Britain. This is of no great importance, of course, since the British market includes some ideal beginners' types.

Especially worthy of attention here are the Mills " 75 "

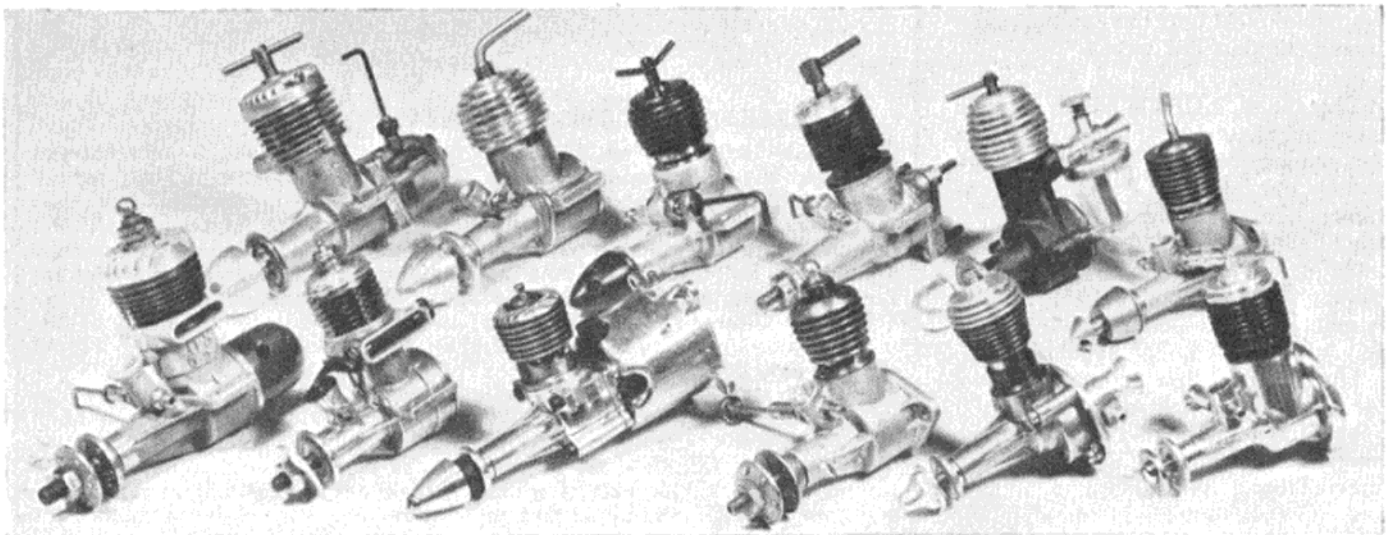


*Fig. 1. A world-wide selection of model motors of under 1/10 h.p. available to beginners in many lands. In the back row are six diesels. They are, left to right: E.D. Bee (Britain), David-Andersen (Norway), Taifun Hobby (Germany), Super-Tigre G.25 (Italy), Mills 75 (Britain) and Star 0.5 (Germany). In the front row, left to right, are six glowplug models: O.S.099 (Japan), Firecracker 0.065 and O & R Midjet (U.S.A.), Fuji 0.049 (Japan), and Cox 0.049 and Cub 0.049A (U.S.A.).*

and E.D. " Bee " models. The Mills " 75," of 0.73 c.c. capacity, is the smaller of the two and is admirably suited to the many beginners' model designs on the market.

We shall be dealing with simple C/L models, suitable for engines of this size, in our next two articles, afterwards going on to F/F models for which the same type of engine may be used.

These two engines are both of the compression-ignition or " diesel " type. It is not the purpose of this article to deal with the principles of internal combustion engines in detail, but, for the benefit of anyone totally unfamiliar with present day model motors, it should be mentioned that the model diesel has no sparking plug or electrical system. Instead, it has a high compression cylinder which detonates the fuel charge automatically. The compression-ratio (which is two to three times as high as for an ordinary petrol engine) is adjustable by means of a *compression lever* on top of the cylinder head which in turn moves a *contra-piston* in the top of the cylinder. See Fig. 2. Most European model motors are of the diesel type.

In the other type of engine, the glowplug motor, ignition is achieved differently. Here, a plug carrying a small platinum wire filament is fitted in the cylinder-head in the same way as a sparking-plug. This plug is simply connected to a 1½-2 volt battery, which causes the filament to heat up to a bright red colour. The engine is then started and the battery removed, the heat derived from combustion now being sufficient to keep the plug glowing continuously and provide ignition for each fresh intake of mixture.

Both types of engines are, of course, of the simple two-stroke type and both are fitted with a needle-valve type carburettor control. This simple device controls the amount of fuel admitted and thus the strength of the air/fuel mixture reaching the cylinder. If the mixture is either much too weak or much too strong, the engine will not work. Therefore, we adjust the needle-valve to get the correct mixture.

On a glowplug engine this is, in fact, the only control we have to worry about. On a diesel, however, as we have seen, there is an extra control : the compression lever.

The real purpose of this control is to adjust the timing of the ignition of the fuel charge. This is necessary in order, firstly, to assist starting, secondly to enable different propellers to be used (which cause the engine to run at different speeds) and, thirdly, so that the natural warming up of the cylinder (which will cause the fuel vapour to ignite too soon) can be compensated by reducing compression.

The fuel we use in our diesel is a special blend containing ether, which, when vaporised or atomised, ignites easily when compressed and ensures easy starting. Many good branded fuels are available, usually costing about 3s. for an 8-oz. bottle, but if you are some way from a model shop and cannot get a proprietary blend, a good substitute can be made with equal parts of ether, paraffin (kerosene) and castor oil. Glowplug engines require a different fuel consisting, mainly of methanol and castor oil with certain additives.

Every modeller finds his first engine an absorbing interest in itself, quite apart from the interest attaching to its future use as a means of propelling models, and it is natural to want to try out the engine before building a model for it. In fact, this is a good idea in any case, since, by first running the engine on a bench, the modeller will soon learn how to handle it.

Most model engines are of the beam mount type with

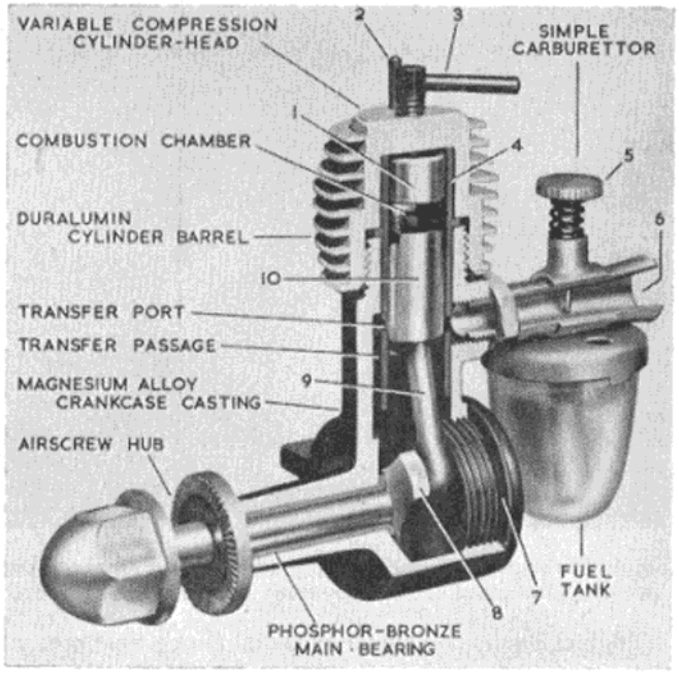



*Fig. 2. A MODEL AIRCRAFT cutaway drawing of the British Mills 75 diesel motor. In addition to the main features indicated, parts are as follows: 1—contra-piston, 2—compression stop, 3—compression lever, 4—cylinder liner, 5—needle-valve control, 6—air intake, 7—crankcase backplate, 8—crankshaft web, 9—connecting-rod, 10—piston.*

flat lugs on either side of the crankcase, permitting them to be bolted down on to two wooden bearers extending back into the fuselage. For bench running, these bearers, which should not be less than ⅜ in. square in section, may be screwed down to a bench, as shown in Fig. 4. Use small machine screws and nuts (not woodscrews) through the engine lugs with washers to fix the motor.

An alternative method of beam mounting is to use a flat piece of wood in which a U-shaped cut-out is made to fit the crankcase of your engine, as in Fig. 5. A third system is a special engine stand such as that shown in Fig. 6. Such a mounting can be purchased from your model shop and is adjustable to take various size motors.

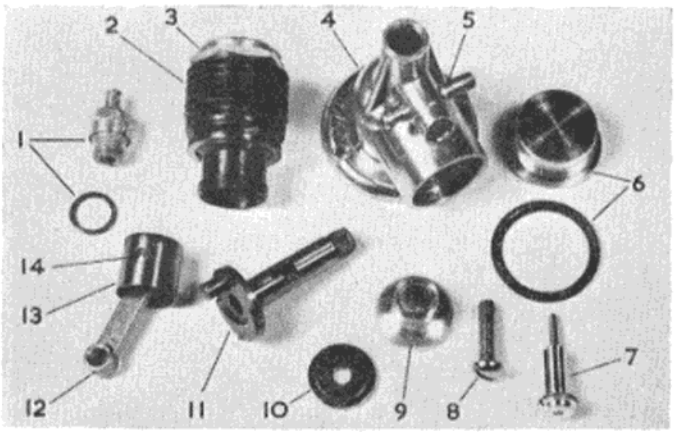



*Fig. 3. The parts of a typical small glowplug engine. 1—glowplug and washer, 2—cylinder, 3—cylinder-head, 4—crankcase, 5—carburettor spraybar, 6—crankcase backplate and gasket, 7—needle-valve, 8—propeller screw, 9—prop drive hub, 10—prop washer, 11—crankshaft, 12—connecting-rod, 13—piston, 14—gudgeon-pin.*

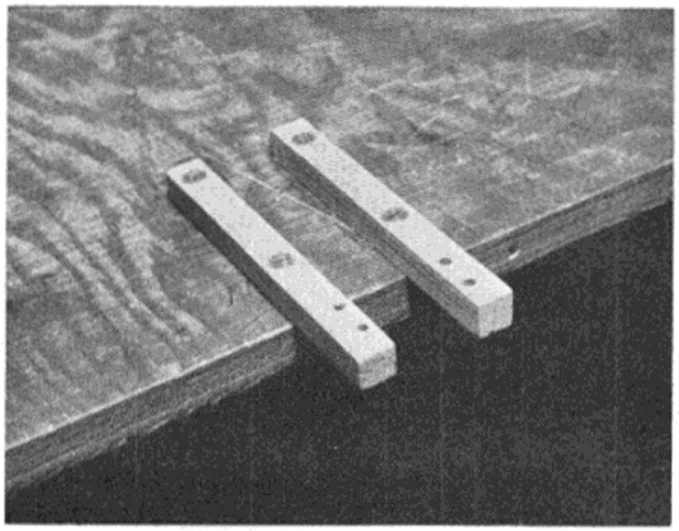


*Fig. 4. The usual method of mounting is by means of two hardwood bearers. For initial testing they may be screwed to a bench.*

Engines having bulkhead or radial flange type mounting can simply be bolted to a suitable piece of wood, which is then gripped in a vice or screwed to the bench.

When fitting the propeller, tighten it on the shaft in such a position that when one blade is brought gently up against compression, the airscrew rests in an approximately horizontal attitude. (See heading photo.) By this means, we can ensure that when a model is gliding down after the engine has stopped, the airscrew is in the best position to avoid a blade being broken off on rough ground, or the engine shaft being bent. This is also a good position to aid starting, as, standing to the left of the engine, it allows a good strong swing or " flick " to the prop, with the right hand, which then follows through towards the body.

To flick the prop effectively, place the forefinger (or forefinger and middle finger if you wish) fairly close to the boss or hub of the airscrew as in Fig. 8. In this position, one gets the most rapid and efficient flick for a quick start and the fingers are well out of the way when the engine starts.

As regards actual prop sizes, let the maker's instruction leaflet be your guide. For learning to start a Mills 75 we would recommend an 8 in. diameter, 4 in. pitch prop. For the Bee, the manufacturer's $7\frac{3}{4}$ in. $\times$ 6 in. prop is very suitable. Err on the large side, rather than the small side, when learning to handle your engine. For small glowplug motors, however, a smallish propeller is to be preferred as these engines are happiest at somewhat higher speeds. A 6 in. $\times$ 3 in. prop is the usual recommendation for a 0.049 (0.8 c.c.) glowplug engine.

When first attempting to start your new model engine, you may be rather discouraged by the results of your efforts. *Don't worry about this at all.* Model engine starting is, very definitely, something that has to be learned. The more you persevere with your engine, the quicker you will acquire that " engine sense " by which you will automatically begin to do the correct thing. By touch and ear alone you will then be subconsciously guided in making the right movements. This is worth far more than any amount of words and the following notes are therefore intended only as a guide to setting you on the right course by which you may learn for yourself, the correct handling of a model engine.

We are confining our notes on starting to model diesels,

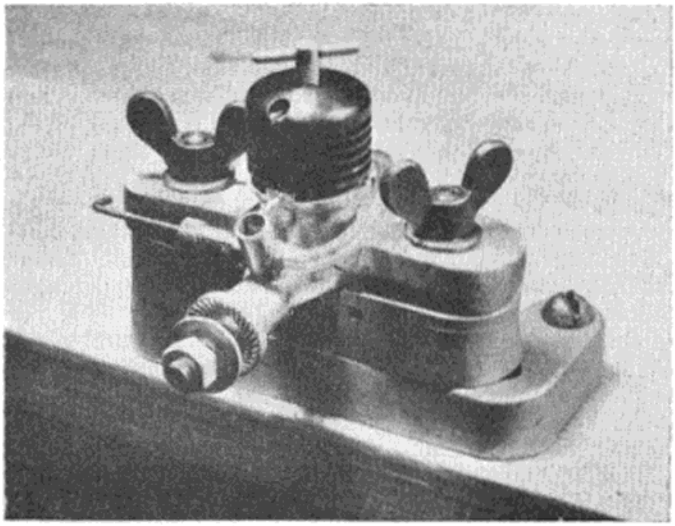


*Fig. 6. An aluminium, adjustable bench mounting which is suitable for all types and sizes of beam mount engines.*

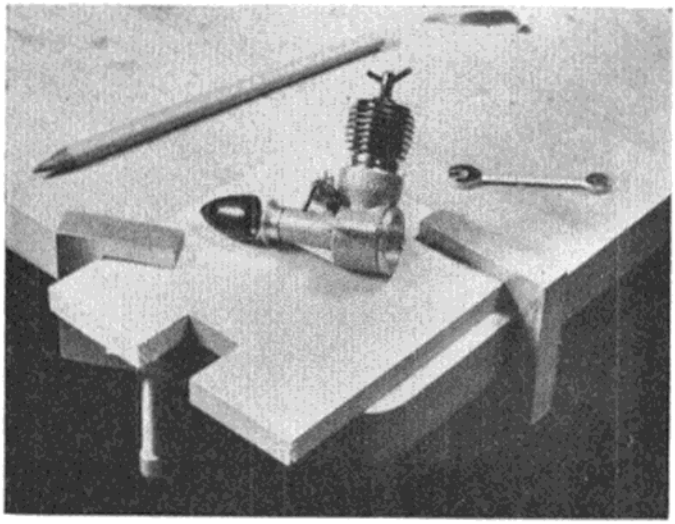


*Fig. 5. Another mounting is a flat piece of wood with a cutout for the crankcase and secured to the bench with X-acto clamps.*

at this stage. Many of these recommendations are also applicable to glowplug motors, but we shall deal with glowplug engine characteristics later in this series.

First, check that the control settings are in accordance with the maker's instructions. Flick the engine over several times. Take notice of how the engine feels and sounds while you are doing this.

Now fill the fuel tank, place a finger over the end of the carburettor air intake to completely choke it and turn the prop three or four times. (Fig. 7.)

Uncover the intake and flick the prop once or twice. You will note that it now sounds " wet " and that there is a slight sucking sound in the carburettor. You may, if you are observant, also notice that the engine turns a little more freely—due to the lubricating action of the fuel which loosens any gummy residual oil.

The engine should now start within a few smart flicks of the prop. If it does not fire within, say, 20 flicks (we are tending to err on the generous side to avoid risk of flooding), choke the intake again for a couple of flicks and try again.

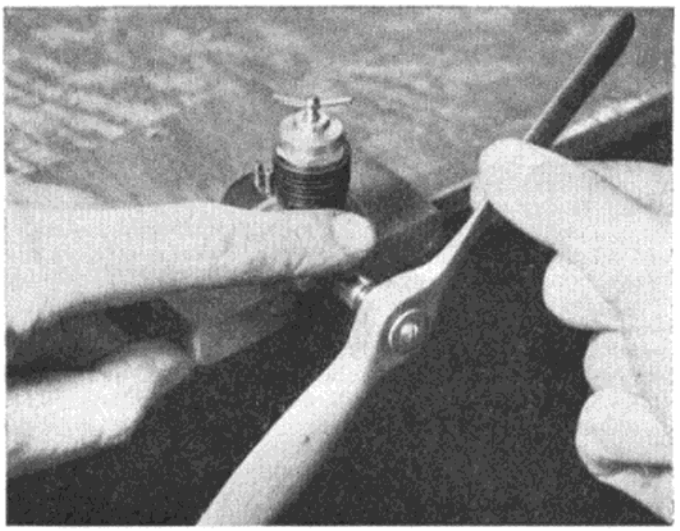


*Fig. 7. "Sucking-in" prior to starting. The forefinger of the left hand covers the carburettor intake.*

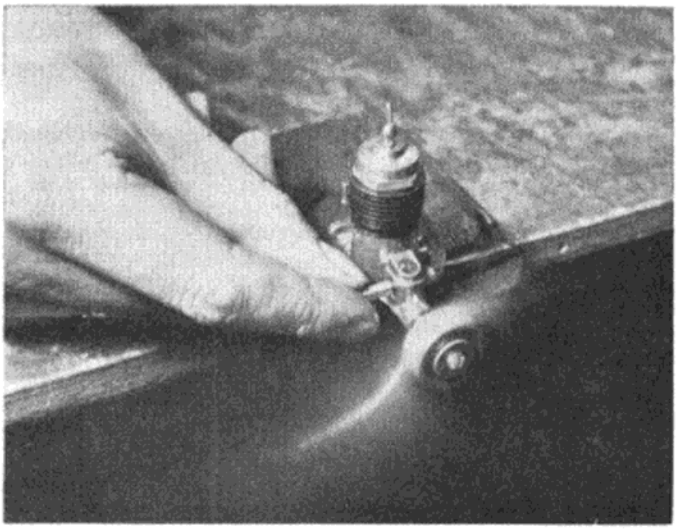


*Fig. 9. Best performance is obtained with a relatively fine needle-valve opening.*

If the engine still does not fire, increase the compression very gradually until it does. If, when the engine fires, it will not now continue to run, reduce the compression slowly. It is possible that, in the process of finding the starting compression, an excess of fuel has been drawn into the crankcase which is now being thrown up into the combustion chamber each time the engine fires. As it is used up, so the lever can be screwed down again until the engine is running satisfactorily.

The best performance is obtained with a relatively weak mixture and high compression. Therefore, we close the needle-valve gradually to obtain this. (Fig. 9.) It is less likely that an increase in compression will be required because, as the engine warms up, so the ignition point becomes automatically advanced for higher speed. It may, in fact, be necessary to slacken off the compression slightly. The necessity for this is indicated when the engine begins to slow up. Reduce the compression until a slight misfire is heard, then increase it again until the miss just disappears. (Fig. 10.) Running the engine with excessive compression should be avoided.

In general, it should be remembered that the critical needle setting hardly alters with speed or load (i.e. depending on the propeller used), but that the compression adjustment does depend on these factors. Also, to get the engine to run slowly on any prop, all we have to do is slacken off the compression.

To conclude, here is a brief summary of the most common starting troubles and the remedies for them:

1. Engine starts but peters out again after a brief run. Cause: mixture too weak. Remedy: open needle-valve about one-quarter turn more, choke intake for a couple of flicks and re-start.

2. Engine slows down and/or oscillates back and forth or stops. Cause: mixture too rich and/or compression too high. Remedy: close needle-valve, reduce compression, flick prop to work off excess fuel, open needle-valve to lower setting and re-start.

3. Engine runs but misfires. Cause: insufficient compression. Remedy: increase compression.

4. Engine runs but with smoky and oily exhaust, irregularly and with reduced power. Cause: mixture too rich. Remedy: close needle valve slowly until running improves.

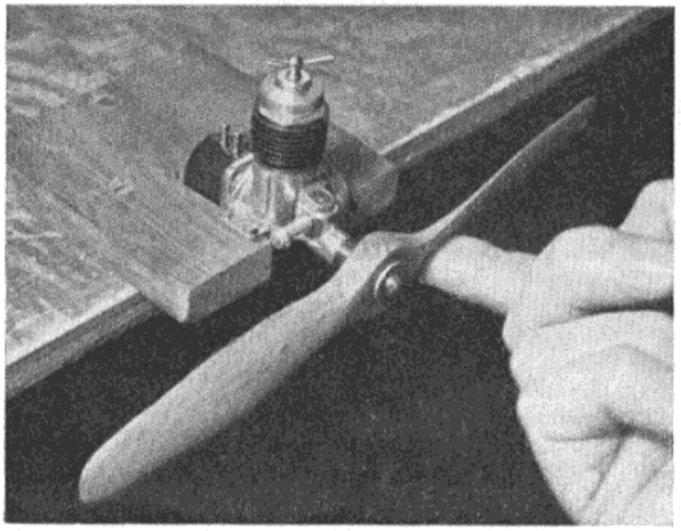


*Fig. 8. To start, flick the propeller vigorously with the finger close to the hub.*

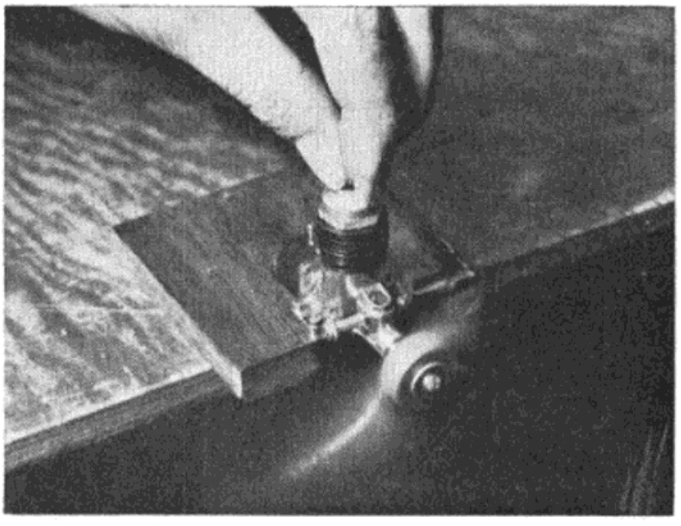


*Fig. 10. A degree of speed adjustment is obtainable by turning the compression lever.*

# British Ace Markings—by P. G. COOKSLEY

ON September 2nd, 1916, a B.E.2C from 39 Sqdn., climbed into the night sky over Essex; the pilot, Lieut. William Leefe Robinson, was destined to win the first V.C. gained in British skies.

Although forty years have since passed, the complete markings of the machine used in this historic action have never before been authentically described.

The victim was the first airship to be destroyed over this country, the Schütte-Lanz S.L.11.

Lieut. Robinson's B.E. had been modified as a single seater with an extra fuel-tank in place of the forward cockpit.

It was doped green above and clear below, with clear wheel discs, and a plain aluminium finish cowling about the 90 h.p. R.A.F. 1a engine. Armament was a single stripped Lewis gun on the starboard side, almost certainly on an oblique mounting. The cockades and rudder stripes were those normally associated with the period, the roundel centres on the wing being about twelve feet inboard from the tips. The serial number appeared in white against the dark dope.

The airship fell on the high ground at Cuffley, north-west of the railway station, in the early morning of Sunday, September 3rd, where, after five hours, it burnt out.

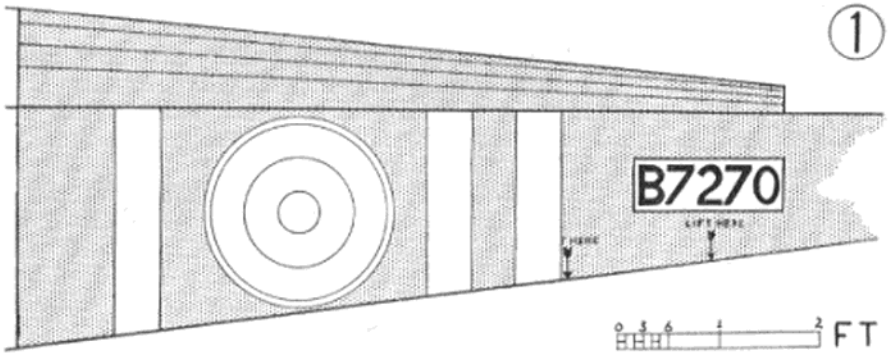
For the record, this craft was wooden framed and consequently braced with (literally) miles of wire, which, during the clearing up process, was rolled into three masses, each over twenty feet long !

April saw the thirty-eighth anniversary of the death of Manfred von Richthofen; much has been written about his triplane, but not the markings of the victor, Capt. Roy Brown.

His aircraft (Fig. 1) was a Sopwith F.1 *Camel* with a 150-h.p. Bentley rotary motor. Regulation finish was carried, the green dope extending over the fuselage lower surface, three-ply panels round the cockpit, and wheel centres. The sides bore the three white stripes of No. 209 Sqdn. with the serial number on a white rectangle 18 x 6 in. In common with the rest of the Flight, the cowling-ring was doped vermilion.

The cockades on both these machines differed slightly from those of the present day. The proportion of the radius of the red disc to that of the whole was 1 : 5 instead of 1 : 3, the contemporary style.

*The writer is indebted to the Air Ministry for assistance with the serial numbers.*




# Mainly Motors

(*Continued from page* 361)

present time, but this is something which may be rectified in the future. E.D. designer Basil Miles read our comments and was prompted to design a motor of this type, based on his 5 c.c. Miles Special diesel. The bore was increased from 0.781 in. to 0.844 in., giving a swept volume of 5.7 c.c. and the same crankcase retained. Though not strictly conforming to current 0.35 design trends, the engine is reported to have a promising performance and an output, over the whole r.p.m. range, which is substantially in excess of that of the 5 c.c. diesel. The motor retains the disc valve induction system (but with a fixed pin running in a bushed backplate) and the twin ball journal crankshaft.

. . . Something rather different is the Star 0.5 c.c. diesel which we obtained from Germany recently. The Star Models company was formed a little over a year ago by Eric Spivey, former English director of the Webra concern. It is a rapidly expanding manufacturing, distributing and export organisation which deals with a wide range of aircraft and boat kits, propellers, engines and accessories. Included in this are the distribution and export of Jaguar engines, which are at present made in two models, a 2.5 c.c. and a 0.8 c.c. model. The new Star 0.5 is, in fact, based on the latter engine and uses the same crankcase casting. We shall be reporting on its performance in a future article. Meanwhile, the engine seems to have been well received on the Continent and one of our USAFE correspondents reports very favourably on it.

. . . From time to time, our Cuban correspondent, Tony Alvarado, who is a refrigeration engineer in Havana, sends news and pictures of model activities there, and very welcome these are too. We get two main impressions : of man-size thermals that will waft away a model from zero feet and of the real enthusiasm of the chaps who meet each Sunday at the Columbia Cuban Army Air Force Base. They have some very impressive models and one of these is the Dynajet powered *Cougar* shown. This model, incidentally, had its maiden flight filmed for a television broadcast.


*Columbia A.F.B., Cuba. Bruce Eglington and his very fine Dynajet powered Grumman "Cougar" fighter. Inset: the model in flight.*

# Topical Twists

## by PYLONIUS

### Foundered Members

A necessary but tiresome sideline of the keen modeller is club founding. Any contest type worth his salt can be relied upon to start at least two new clubs in the course of a season, with a couple of stray secretaryships thrown in for good measure.

At the outset of his career the Keen Modeller might be privileged to have a round half-dozen model holders at his constant disposal, though he might think they'd be less round were they to do an occasional spot of retrieving. By the end of the first season he will almost certainly be able to describe himself picturesquely as a Lone Wolf, hungrily scouring the local flying areas for model-holding victims. When he chances upon his prey—perhaps a couple of kids innocently playing with a chuck glider—he pounces savagely. Before the little blighters know what's happened they are paid up founder members of a new club, doomed to a nerve-racking term of bone-wrenching model holding. Inevitably, alas, the slave labour is lured away by the glamorous enticements of Davy Crockett, and the Lone Wolf is on the prowl once more.

After a few seasons of model founding, the problem of club titles becomes acute. All the short and sweet district variants will have been exhausted, and with officialdom frowning upon Cement Slingers, Balsa Butchers, and suchlike breezy bands, club names are apt to become a trifle ponderous. The latest example of this to catch my eye is the North West Middlesex Flying Club (Thermaleers). What a Thermaleer is can be anyone's guess, but I presume it to be the sort of expression commonly adopted when a clubmate's D/T-less model hits a riser.

Come to think of it, this whole club business is a bit of a baffler, particularly on the financial side. You imagine you belong to an average sort of club, where currently the members are in open revolt at the membership fee being raised from 1s. to 1s. 3d. per month, when you read in club news that unknown clubs by the score are building their own clubhouses. Club types crouched in draughty attics or huddled in the back room of the local model shop must go green with envy over these fabulous reports of spacious, detached club premises, with all mod. cons. for mods, situated within two minutes of the airfield . . . etc. Their only consolation is the thought that there couldn't be much in the way of model flying in all this splendour, model flying being essentially a poor man's hobby. There are the radio types, of course, but they soon finish up with the church mice brigade.

* * *

### Job-a-Mod Week

The old fashioned Boy Scout used to spend his time in camping, fire-making, wood-chopping, and other primitive sufferings. His modern counterpart is the Air Scout, who, it seems, is just another aeromodeller in a sympathetic disguise. Instead of woodcutting axes he is more concerned with aerodynamic axes, and in many cases his fire raising techniques are confined to D/T lighting. I might also say that, as a modelling scout, he should know his wolf cub drill, but we'll skip that.

As a smoking modeller I'm interested in the Boy Scout trick of making fire by rubbing two twigs together. The only method I know of lighting a D/T fuse is by poking at it with a lighted cigarette. This means that after a hectic day's model flying I stagger home green about the gills. Perhaps if we smoking modellers could learn this magic twig trick we'd really benefit from a day in the open air.

* * *

### Family Affairs

I should have thought that a man reaches the age of discretion long before his son is old enough to begin to ask embarrassing questions. So when inquisitive son poses the inevitable "How do diesels work, Daddy?" you would imagine that Daddy, in his discretion, would idly flip over a few bob for pestering offspring to buy one of the countless books on the subject, and settle down to some mature and intellectual pursuit, having first tuned in "Gun Law" to suitable brilliance.

But modern dad, it seems, is still very much the enthusiastic boy according to a recent letter from one such patriarch. When growing son gets into difficulties with his 3s. 6d. kit, modern dad doesn't merely go to his assistance, but clears him off the kitchen table to take over the family model building himself. Son is exiled to the wild prairies of "Gun Law," whilst dad soon learns that the inability to build 3s. 6d. kits is not peculiar only to dim son, but must be something in the nature of an ancient family curse.

Dad, however, perseveres with desperate tenacity until eventually an assemblage of balsawood and tissue bearing a remote resemblance to a model plane is ready for the flying field. Then comes the worst shock of all. Apart from the torture of building the fiddly things, you have to learn to fly them. At this point Dad carts home the wreckage and proceeds to write to the model journals in the most glowing terms of this wonderful hobby.

Possibly a reason why so many Daddy-age men take the plunge into the aeromodelling abyss is that it is not now such a public disgrace to venture out with a model plane—particularly if you have a growing son to carry it. And it might well be that Dad himself has no say in the matter. With model flying becoming as fashionable as motor-scootering among the ladies, poor old Dad lies under the constant threat of being jollied out of his favourite armchair in order to take the family to a model rally.

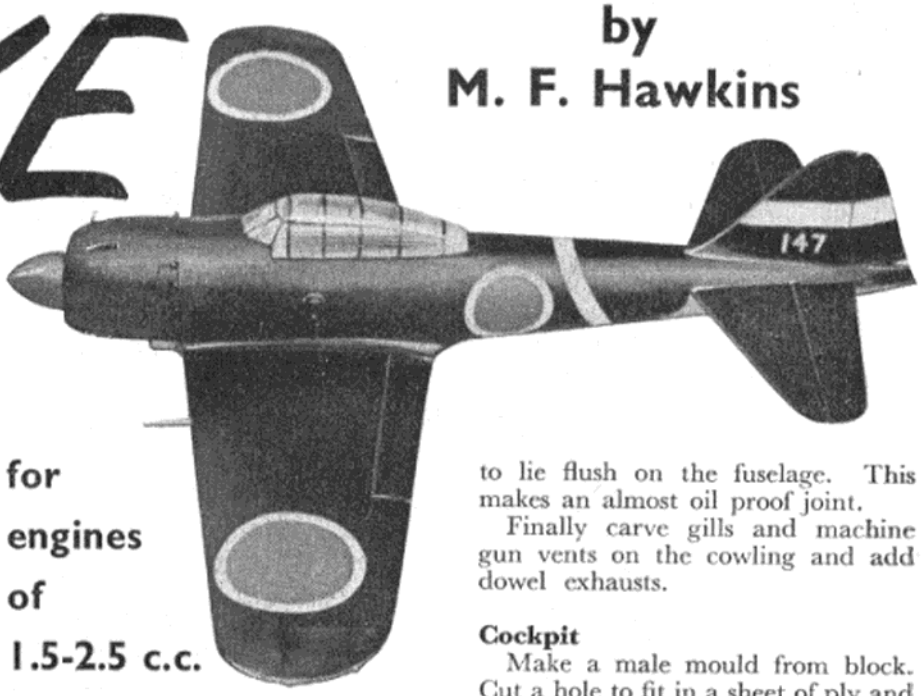
Why all the ladies are scrambling to get on the model bandwagon is a greater feminine enigma than the hats they wear. Only a few years ago any spirited young woman would be halfway home to Mother before hubby had cut out the first bulkhead (which would give her plenty of time, anyway). Now, the flying fields are simply swarming with fair sweepers-up-of-balsa-dust. Outside this homely chore, however, the model fashion craze is a rather one-sided affair. The men are driven to do all the donkey work of building and flying the models, while the presence of the ladies is merely to add glamour to the social scene.

Generally, the lady supporters run to three types. The young and leggy damsels who frolic about in the flying areas; youthful matrons who promenade the kids around the ice-cream kiosks, and elderly and less active mums immovably entrenched in the car park and picnic locales. We might also mention the Grannies, who, under no circumstances, ever leave the cars.

With notably few exceptions the ladies have the good sense never to touch a model plane, though the minority that do fly them seem to outstrip the male competitors in more ways than one.

# ZEKE

by
M. F. Hawkins




for engines of 1.5-2.5 c.c.

THE full-size counterpart of this C/L scale model was perhaps one of the best known of all the Japanese fighters used in the last war. And if the *Zeke* 5-2 looks very similar to the famous *Zero* fighter, it's no accident, as the original *Zeke* was, in fact, the *Zero*. Various modifications to successive marks altered the original features somewhat, but the basic shape is still there.

**Wing**

Cut out wing ribs, also W.9 and 12, and four each of W7 and 8. Assemble wing halves with leading and trailing edges, the tips being made up from two laminations with the aluminium lead out tubes sandwiched between on inboard side. Put ¾ oz. lead in the outer tip.

Add leading edge sheeting, noting that the underside sheet comes to the centre section, whereas the top sheeting ends at W1. Insert block by W3 for U/C tube. Join wing halves, using underside sheeting and W10, with 1½ in. dihedral under each tip.

Add gussets and reinforcements to W1 and W4 and drill for flap dowels. Cut A4 from soft ¼ in. sheet and round off its leading edge. Glue A2 and 3 and outboard dowel in place. Attach flap to wing and push inboard dowel, with flap rod, into place from the centre; glue firmly. A lightening slot can be cut out of the back of A4. Insert A1.

Assemble control plate, wires, push rod and W11 and cement firmly into centre section, gusseting to W1 with scrap block.

Now bend the cross bar from 22 gauge wire and solder to the push rod so that the flaps are level when control plate is neutral. Sheet top of centre section leaving a hole for flap rods and push rod. Add ⅛ × 1/16 in. capping strips to the ribs and level the strips on W12 so as to overlap the gap between W12 and A4.

**Fuselage**

Stick F1 and F1A together, noting that F1 overlaps 3/32 in. to allow butt jointing of the planking. Assemble engine bearers, F1, F2 and the fuel tank. Glue two pieces of planking ¾ in. wide along the centre line on each side and insert F3, 4, 5, 6 and the tail block. Now trim l.e. of wing to fit flush on F1, thread the push rod through the formers and firmly glue F1, 2 and 3 to the wing. Insert some soft block behind F6 to make a firm seat for the tail.

Cut the tail from ⅛ in. sheet. Make a hole through the dowel with a red hot pin, and pass the horn through it, then bend the end at right angles and squeeze back into the dowel with pliers; bind and glue firmly. Assemble elevators and mount tail on fuselage, sliding back and forth until elevators and flaps are neutral together. Cement a strip of planking on the top of the fuselage from F4 to just aft of F6. This provides support for F7 and F8, which can now be cemented in position, after which the rest of the fuselage sheeting may be completed. Assemble fin and rudder, noting that the fin ribs are just 1/16 in. sheet capping strips.

The cowling is made in two halves from ½ in. sheet, with the half former FO from mm. ply. Press studs sewn to mm. ply and let into opposing surfaces form the cowling attachment. A ½ in. wide strip of mm. ply is glued inside the front of the cowling halves.

Add oil cooler and wing fairings from scrap block. Cut some ⅜ in. square pieces of celluloid, make a hole in the centre so that they are a tight fit round the tank vents, smear on plenty of cement, and slide down to lie flush on the fuselage. This makes an almost oil proof joint.

Finally carve gills and machine gun vents on the cowling and add dowel exhausts.

**Cockpit**

Make a male mould from block. Cut a hole to fit in a sheet of ply and attach a piece of thick celluloid to it with drawing pins, allowing plenty of overlap. Place the male mould in the bottom of the sink with the ply on top-celluloid side down. Pour on boiling water and push. The cockpit is moulded in gentle stages.

**Finishing**

Give two coats of thick talc and clear dope mixed and rub down; cover wings with heavy Modelspan and the rest with lightweight. Give a thin coat of talc and clear dope. Rub down and give two coats of dope, and then colour.

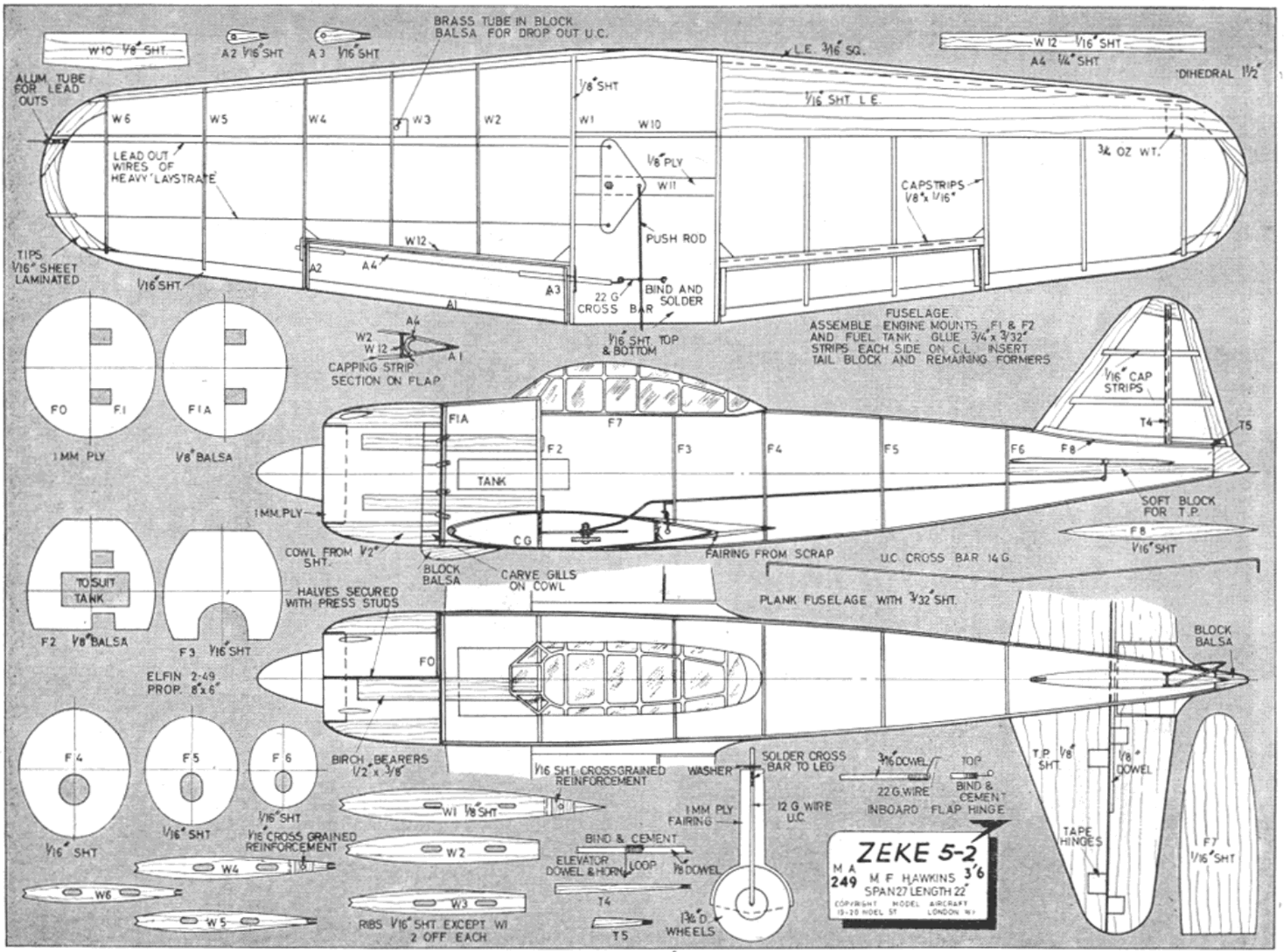
National markings consist of a red disc with a white outline on the fuselage sides, and on both upper and lower surfaces of the wings. Actual colour schemes varied, but the model is finished in dark green on top and blue grey underneath, with white bands on rear fuselage and fin, with a yellow number on the latter. Cockpit interior is light green, and the commercial 1¼ in. spinner finished in red.

**Undercarriage**

Not fitted on original. Angle the tubes so that the wheels are in front of the wing leading edge. A tailskid must be fitted if an u/c is used.

**Flying**

The c.g. should be a ¼ in. or more in front of front line. Manoeuvres are not as tight as a lightly loaded stunt model but are very smooth,



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# CLUB NEWS AND NEWS FROM THE S.M.A.E.

### CAMBRIDGE M.A.C.

In spite of the forecast the weather turned out fine for the annual C/L Rally and entries arrived from many parts of the country. The contests proceeded smoothly, but were somewhat marred by the bad sportsmanship of some fliers, who apparently have not learnt how to lose gracefully.

The three in a circle combat final was, however, a notable exception, and good clean flying resulted in no broken models.

That veteran West Essex "B" racer, *Jack of Diamonds* was leading the final comfortably until the up line broke, an unhappy end to a model that has been winning races for over three years.

**Results**

*Class A.* 1st L. Hayward, Chingford. 2nd J. Thompson, Forresters. 3rd P. Smith, Chingford.

*Class B.* J. Nunn, Lomac (only model to finish).

*Combat.* 1st R. Standing, Ecurie Nerk. 2nd M. Templeman, Sidcup. 3rd N. Butcher, Croydon.

### FLYING DRUIDS M.A.C.

With the help of George Honnest-Redlich we are organising at R/C Rally at Stoney Cross, Hampshire, on the 30th September. There will be two classes of competition: Rudder only and Multi-channel, with prizes in each class. Contests will start at 12 noon—entry fee 3s. 6d. per model. Scoring will be similar to that used at the I.R.C.M.S. meeting at Stratford. All competitors must be covered by third party insurance. For further details send an S.A.E. to G. Griffith, Dept. R., The Flying Druids, 18, Salisbury Street, Amesbury, Wilts.

### HYDE (CHESHIRE) M.A.C.

The annual rally will be held on Sunday, October 21st, 1956. Entries should be sent to the above address not later that October 14th. Entries: seniors 2s., juniors 1s. 6d. Entrants will receive a card for the contests which will admit them to the field. Spectators' admission, adults 1s., children under 13 years 9d. Rally commences at 11 o'clock, ceases at 6.00 p.m. Parking: coaches 5s., cars 2s. 6d., motor-bikes 1s. Events are as follows (all three flights and 3 min. max.): Power—engine run 15 sec. Rubber—entrant to wind own motor. Glider—to S.M.A.E. rules. Team race—to be held if sufficient entries are received.

R/C: To the following rules—two flights; max. points 200; hand launched; model to fly a triangular course of a max. distance of 500 yd.; model to land from a glide. Points awarded as follows: Appearance and finish of model, 30 points; flying characteristics not under radio, 20 points; under R/C, 20 points; aerobatics, 40 points; model under control at 600 yd. range, 40 points; model's approach and landing, 30 points; spot landing, 20 points. Models not airborne before 5 min. have elapsed at the take-off point will be allowed another try later, if not then airborne after 5 min. they will be disqualified. Model to be under power not more than 15 min. and not less than 5 min. Winner is entrant with max. points from either flight. Prizes are new engines, kits and accessories, ladies' prizes, rally champion to receive a special prize. Bonus prize for best prang and best flight of the day. Also we have a new and novel recovery service—so no lost models at our rally !

**The pit crew release P. N. Godfrey's "Kestral" in the class B final at Cambridge. The model, which is a popular M.A. Plans design, unfortunately crashed after a mix-up with Gibb's machine.**

### WELSH RALLY

The Welsh Rally was held at Fairwood Aerodrome, Swansea, recently. Although the weather was perfect, only five clubs attended. These were: Cardiff, Ebbw Vale, Merthyr, Port Talbot and Swansea.

**Results**

*Class A.*—(1) James, Ebbw Vale ; (2) Cook, Cardiff.

*Stunt*—(1) Port Talbot.

*Power*—(1) Horlock, Cardiff; (2) Cook, Cardiff; (3) Taylor, Merthyr.

*Glider*—(1) Port Talbot; (2) Morgan, Cardiff; (3) May, R.A.F.

*Rubber*—(1) Holland, Swansea.

### SIDCUP A.S.

The J. & E. Hall's club and ourselves are running a stunt and combat contest at J. & E. Hall's sports ground at Dartford, Kent, on October 7th. The contest is open to all. The stunt will be to S.M.A.E. rules and the combat will be flown on 50 ft. lines and 3.5 c.c. max. motor. Number of cuts to score. We (Sidcup) will be presenting the hardware and prizes. Details can be given if required, from J. Templeman, comp. sec., 718, Sidcup Road, New Eltham, London, S.E.9.

### EPSOM & D.M.F.C.

Gale force winds with periodic rain squalls forced us to abandon our slope soaring rally at Box Hill on July 29th.

However, it is evident from the handful of hopefuls that accumulated in the nearest tea gardens that there is considerable interest in soaring, both free flying and controlled.

Therefore, another attempt at holding the contest will be made on October 7th, again at Box Hill.

### WEST HANTS. A.A.

The Clerk of the Weather gave his blessing to the West Hants. Aeromodellers Association for their first open rally, held at the R.A.F. Station, Andover.

The radio controlled glider trophy, judged by our old friend "Rip," was well and truly won by a Northern Heights team led by Bob Copland, who made a fine duration flight of 4 min. in the second part of the contest together with a perfect spot landing, gaining them a further 100 per cent. on their score. R. Edmonds, of High Wycombe, forsaking his team race pals on this occasion, also did very well and placed second in the event.

Among the many well-known faces around the team race circle were J. Oliver, of Oliver Engines, and Carter of Carter-Nipper fame. Winning model in Class "B" was *Jack of Diamonds*

Northern Heights again showed their strength when R. Studor went in to win the Class "A" with a very sleek reworked Oliver job, using 7 × 9 in. Tornado Plasticoat props.

Open glider was won by Peter Manville, of Bournemouth, with a score of 7.00 min., A Mussell, of Brighton, claimed the open power prize with 8.15 min. and N. Worley, of Southampton, triumphed with his well known Jetex "200" job.

### NORTH KENT NOMADS M.C.

Due to bad weather we were unable to run the C. H. Roberts Cup as scheduled. It will therefore (weather permitting, this time, we hope) be held on September 30th, time, place and rules as before.

### CHESTER M.F.C.

As in past years the Chester Model Flying Club held their annual C/L meeting on the Roodeye, Chester, as a feature of the Autumn Sports. Entrants came from as far apart as Tynemouth and Nottingham. Among the many entrants were some of the British race team which were second in the Criterion of Europe.

After an exciting end to the Class "A" team race the winners were: 1, F. Houghton (Wharfedale); 2, A. Rhodes, (Forresters); 3, L. Davy, (Wharfedale).

Although the Class "B" event was held in heavy rain the results were:—1, T. Rowley (Heath M.A.C.); 2, L. Davy (Wharfedale); 3, B. Rushworth (Wharfedale).

In the stunt flying the victor was a former world champion and the scoring was very close:—1, J. G. Eiffaender (Macclesfield); 2, P. G. Jabb (Crosby); 3, T. Jolly (Cheadle).

Unfortunately the rain washed out the combat event after 13 heats and no result was given.

### HAYES M.A.C.

The club turned out in force as usual for the Croydon Gala. We were due for a busy day, since, in addition to the gala, we were to fly off an L.D.I.C.C.C. round against Northern Heights M.F.C. We finally beat them by the smallest possible margin, namely, 1 sec. In the Croydon Gala itself, the most successful member was J. Baguley, who won the slope soaring with three maximum flights and a 4 : 07 fly-off, utilising lift from the valley floor. With the same model, a 96 in. lightweight, he placed second in the open glider event—altogether a most satisfactory performance.

### CRYSTAL PALACE M.A.C.

The ranks of modellers at Halton increased when the Crystal Palace fraternity burst out of their coach and got organised. The sun affected a few members, causing them to get competition minded.

Mike Ballentyne tried combat, but the streamers kept their distance, and Mike kept his model.

John Baggett had a stab in the power event, and retired gracefully. Peter Bragg stuck his nose into the R/C (stout fellow) but his model, after fighting the breeze, decided that the "spot" was in the wrong place, and departed downwind, with Pete abandoning radio in an effort to will the thing back.

Having had their fun, the club ganged up on the poor P.R.O. and badgered him into entering his *Auster* in the concours. Murmuring something about models needing to be built especially for this event, he wiped the fuel off the fuselage and left the judges to it.

The result proved the club members right after all, and a good finale was had round the prize-giving tent.

Who are these Crystal Palace people, anyway ? Ring SYD 4361 and find out.

### NEW CLUB

**LANCING & D.M.A.C. R. W. Booker, 28, Greet Road, Lancing, Sussex.**

### SECRETARIAL CHANGE

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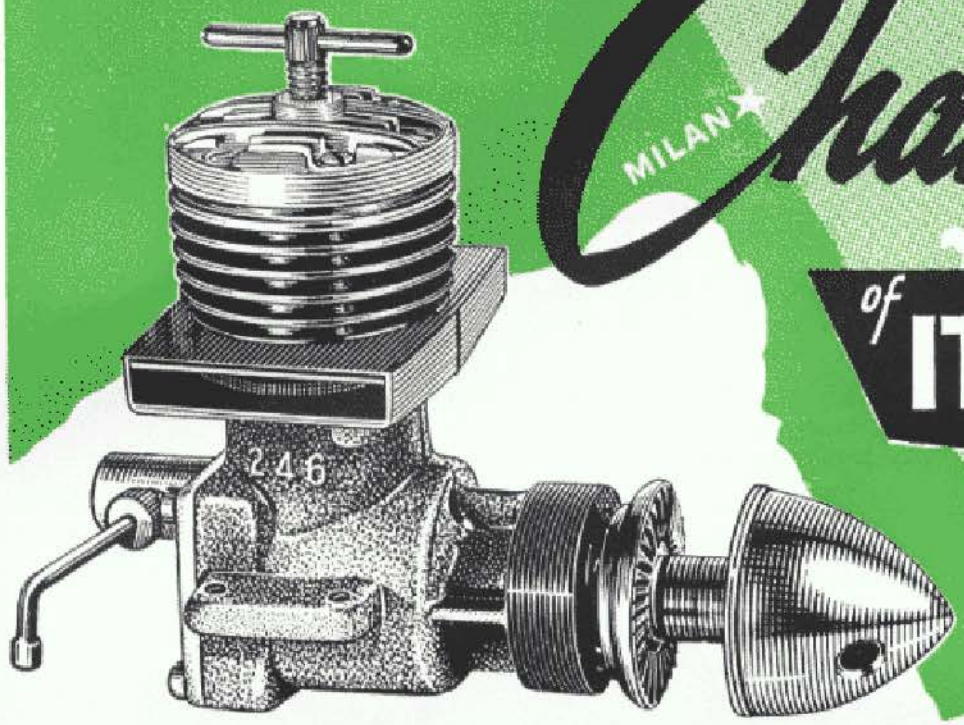


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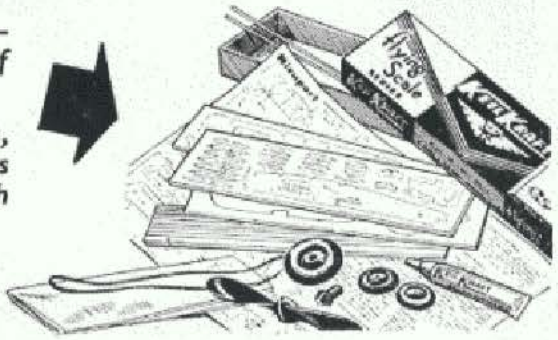

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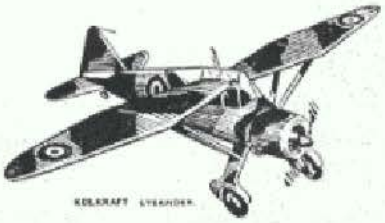


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