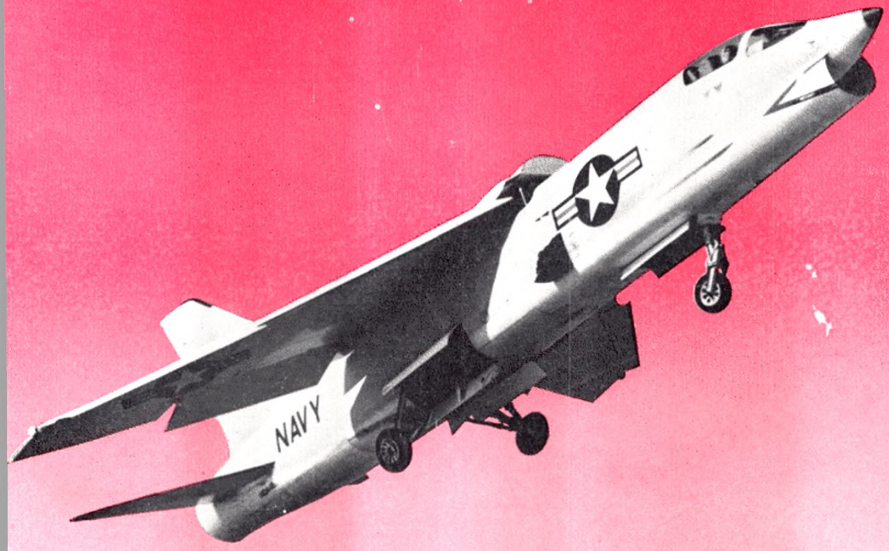
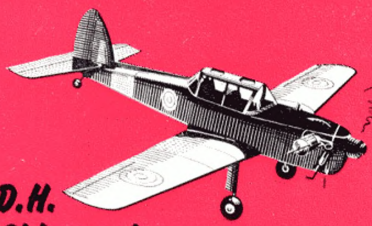
NOVEMBER 1956

AERO MODELLER

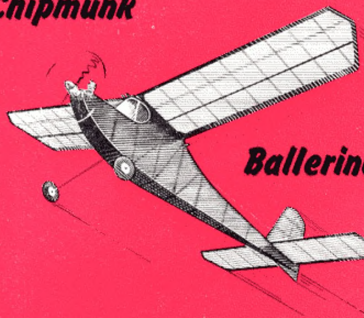


1000 mph F8U-1 CRUSADER DRAWING
FULL WAKEFIELD CONTEST REPORT
AMAZING MODEL COLEOPTER
SPANISH STUNT MODEL

1/6

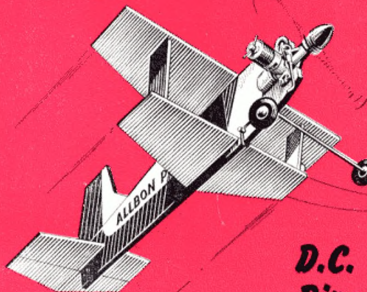


D.H. Chipmunk



Ballerina

Wimpie



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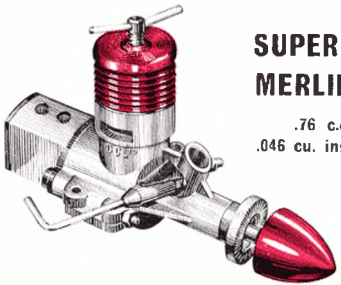

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AERO MODELLER

"Covers the world of Aeromodelling"

VOLUME XXI
NUMBER 250
NOVEMBER 1956

Managing Editor - C. S. RUSHBROOKE
Editor - H. G. HUNDLEBY
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Special features

★

Regular features

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"THE TIME HAS COME . . ."

TO SPEAK OF THIS AND THAT! Trouble is, there are so many items that could well be discussed that we are flummoxed where to start, and where to finish. However, to get off on a bright note, what a pleasant end to a season of rain, wind, and more rain! As we write this the sun is shining outside, and it's much too hot to wear a jacket, so the editorial sanctum has all the looks that should have obtained way back in June, July and August, and our tempers are getting bearable once again. Farmers have been given a respite, and fortunately the harvest is being gathered in time—though we have no doubt that some agricultural heads will be scratched when a bundle of balsa sticks and ragged tissue appears in the midst of a corn stook.

Second bright spot is the excellent performance of proxy flyers in this years' World Championships. The power event at Cranfield saw a proxy-flown model right up in the lead with two British machines, and no less than five proxied models in the top twenty . . . this against the toughest opposition to be found anywhere in the world. Again in Sweden, Hakansson and Blomgren took their charges into second and fifteenth places, though the bottom end of the listing shows that proxy-flown machines were at a disadvantage in this particular contest. In our opinion, the Wakefield model more than any other requires handling by its owner, and we look forward to the day when every entrant can compete in person. We have yet to hear the results of the A/2 meeting in Italy, but have no doubt that such proxies as are required are well up to International standard, for our Italian friends have clearly demonstrated their abilities in post-war years.

And, finally, what of our future domestic contests? Following requests from some Areas, it was agreed that the former system of holding the first Eliminator in the autumn of the year preceding would be dropped, this being made possible by agreement that Championship meetings would not be held earlier than August, thus allowing two Elims and the Trials to take place in the operative year.

But what do we find? A glance at the list hereunder shows that, with the withdrawal of Elimination status, entries for three National contests were some 50 % less than earlier years. Whilst we do not have the figures for the 1956 Gutteridge Trophy event as we go to press, preliminary information from some Areas shows that participation was almost non-existent, and some of the most consistent entries were conspicuous by their absence . . . and this on one of the finest flying days this year.

	1954	1955	1956
HALFORD TROPHY	153	118	77
K. & M.A.A. CUP	263	254	120
GUTTERIDGE TROPHY	134	121	*not known*

It is obvious that International class flying only attracts when some factor requires attention, such as building up a sufficient score to qualify for the vital Trials meeting. Whatever the reason, it behoves those responsible for the National Contest Calendar to do some research into the whys and wherefors of domestic contests, for it is obvious that the general interest is not maintained throughout the season.

For this reason we applaud the efforts of the new S.M.A.E. Competition Secretary, Sam Messom, who has distributed a questionnaire to all affiliated clubs asking for their likes, dislikes and views on contest matters generally. We only trust that the response is generous enough (and even more important, constructive enough) to have made his task worthwhile. Dare we suggest that—as usual—the biggest bleats will come from those who could not take the trouble to make their views known in time, and through the proper quarters!

On the cover . . .

Production model of the Chance Vought F8U-1 Crusader roars skywards as it leaves the Dallas, Texas, flight line for delivery to a U.S. Navy proving station. The Crusader is a 1,000 m.p.h. interceptor far in advance of the best that many other nations can claim today. It abounds in technical achievements, notably the two-position wing, and is drawn in detail on pages 588/9 of this issue. The mysterious shallow-profile inghlack item just by the fuselage insignia is an emergency ram-air turbine.

Heard at the HANGAR DOORS

Big Stuff

Prizewinners at the 1955 All-Britain Rally were guests of British Overseas Airways Corporation on Saturday, September 15th, the day before this year's event at Radlett. They were taken on a conducted tour of the London Airport maintenance base (*above*) and given the opportunity of examining at close hand the internals of a Boeing Stratocruiser and its mighty powerful four-row 28-cylinder Pratt and Whitney piston engines. Passing the several Bristol Britannias, Syd Savage of St. Albans and Guy Winder of De Havilland (Hatfield) could not resist a swing at the massive hollow steel blades of a Proteus Turbo-prop; but they failed to budge it as the photo *at right* shows.

This support of the modelling movement by B.O.A.C. is, we hope, the beginning of a closer association between this country's largest airline and the hobby. Speedbird Trophies have been donated by B.O.A.C. to the All-Britain Rally for annual award in the Team Racing events, and the tour of London Airport is likely to be continued as an annual inducement for all the Radlett winners.

STOP PRESS

As we close for press we learn from a daily newspaper that Ray Gibbs won the World Speed Championship at Florence with a speed of 139·81 m.p.h. Whilst official confirmation is awaited, it does seem fantastic that Gibbs has been able to raise his own World Record figure by no less than 16 k.p.h., but full details will appear in our December issue.

Those Controversial Changes

Echoing on the universal outcry apropos suggested rules changes to F.A.I. model specifications, etc., the S.M.A.E. Council recently debated its own proposals to be submitted to the December meeting of the International Models Commission.

As a result, it will be proposed that the earlier S.M.A.E. recommendation that R.O.G. be abolished shall be re-submitted; that no change shall be made to either Wakefield, Power, or Glider specification; but that engine run for the power event shall be reduced from 15 to 12 seconds. It remains to be seen what recommendations are forthcoming from other member nations, but in any event, the final decisions will be obtained from a postal ballot taken on the discussions arising at the December meeting.

A further S.M.A.E. recommendation will be that no model specification changes will take place at less than four-year intervals, thus ensuring that many top line models are not consigned to oblivion too early in their career.

Caustic Comment!

Comment in the Italian magazine *Rassegna di Modellismo* on the airfield situation as related to World Championships is of interest, and is reproduced here for the benefit of readers who do not have access to international publications. We quote:

> *"We knew that in Hoganas we were going to find bad weather. The sea is near, and rain is not unusual in Sweden. Up to here then no surprises, but what WAS surprising was that a World Championship would be held on an airfield as big as a pocket handkerchief, surrounded by woods and houses. The models, in a wind of 40 k.p.h. soon disappeared in the air dark with rain, or were caught in strong turbulences—or were definitely lost, chased in vain*

by motorcyclists in the maze of small streets of the little town.

"To be able to win in these conditions it was necessary to either have a great deal of luck, or many means of retrieving the lost models—so the natives won.

"We Italians are not cherished by the blind Goddess, and not even the best efforts of the team could avoid Fea losing his 5th round flight, having lost a model in the 2nd round, and another in the 4th. He was lying equal leader with the winning Swede Petersson and the American Kothe, and had a great chance, because in the final launch these two only had times of 2 : 39 and 2 : 35.

"No use to complain now. Sweden organised the competition in Hoganas where special facilities from the industrial concerns were available, but what can others say? Maybe it is criminal to risk the best models in the world on a field of this kind, for in Sweden there are certainly better ones. (For instance Norkopping in 1952.) Well, done is done, and it will be repeated next year if nobody will protest to the F.A.I."

In our opinion, little criticism could have been levelled at Hoganas airfield had the wind been in the opposite direction to that obtaining on the day of the contest, and that it is a factor that no organiser can be blamed for. Granted, it was a risk using a field virtually on the coast, for an off-shore wind would have made flying impossible, but we shall be interested to see whether or not the Models Commission make any recommendations in view of the Italian charges.

The Firm Hand

For failing to honour his written undertaking to the S.M.A.E., by virtue of which Mr. George Upson arrived at the Power Championships with only one model to fly, he has been suspended from consideration for International competition for the period ending December 31st, 1957.

A further result of this unfortunate occurrence is that in future selected Team Members will be required to guarantee to the Council at least 14 days before departure for an International Contest that the full complement of main and reserve models are available, and that such models will not be flown in the interim period.

Ellehammer Stamp

Philatelists will be interested in the new issue of a special stamp (*below*) to commemorate the achievements of Jacob Ellehammer as described in our September issue.

Models at Farnborough

As most of our readers know the static exhibition at Farnborough S.B.A.C. Air Display contains a veritable galaxy of models, most of them on the aircraft manufacturers stands as miniature tokens of their wares.

Highlight this year was the miniature flying display on Messrs. Vickers Armstrong's Stand, which featured R.T.P. air-jet driven, scale models powered by compressed air and flying one at a time round a central pole. The compressed air at 100 lb. p.s.i. is delivered from a compressor unit via the central pole and a radius arm.

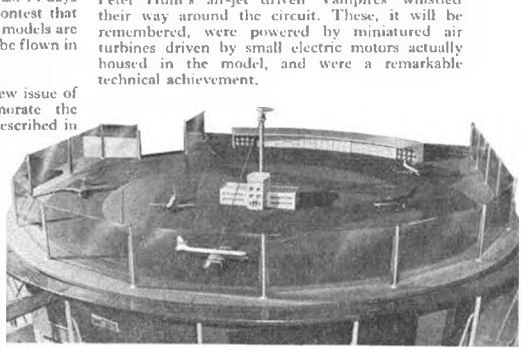
Control for taxying and flight is effected by a single throttle-type lever. As the compressed air is fed to the models, they move slowly forward under their own power. As taxying speed increases lift is developed and a combination of lift and centrifugal force leads to the take-off. The operator can control the circuit speed by means of the throttle (a top speed of 45 m.p.h. is possible) and landings are made by a gradual reduction of power. A transparent safety screen encircles the flight path. *See photograph below.*

The aircraft models themselves are made of fibre-glass reinforced plastic and are very light.

The whole of the flying unit, control system and the models themselves, were designed and built by the Severn-Lamb, model engineers, of The Fold, Stratford-on-Avon.

It should be emphasised that the radius-arm serves only to pipe the compressed air to the aircraft. It does not provide any motive power—and indeed, it is the models which rotate the radius-arm rather than vice-versa.

We could not help but reflect also, how this particular phase of exhibition modelling has progressed since the early days at the Aeromodeller Dorland Hall Exhibitions, where Squadron Leader Peter Hunt's air-jet driven Vampires whistled their way around the circuit. These, it will be remembered, were powered by miniatured air turbines driven by small electric motors actually housed in the model, and were a remarkable technical achievement.



1956 WAKEFIELD CONTEST

HOGANAS — SWEDEN

Reported by C. S. Rushbrooke

No argument here about take-off as Hughie O'Donnell demonstrates the perfect launch

OLD MAN WEATHER again played a considerable part in the results of a 1956 World Championship event, but whereas a fortnight earlier at Cranfield the conditions cleared as the contest progressed, in Sweden mediocre weather steadily deteriorated until the last round was flown in a steady downpour of rain that dampened even the keenest enthusiasm.

Following her Team win in 1955, Sweden had the honour to stage the 1956 event, and once again the Royal Swedish Aero Club put on a grandly organised affair, considerably aided by the support of the citizens of the town of Hoganas, an industrial community in the southern part of Sweden, and the heart of the Swedish mining and ceramics centres. Such wholehearted co-operation made the stay of competitors and guests a most enjoyable affair, and full marks go to George Derantz and his party of willing and efficient workers for a meeting outstanding in its memories, and, with the one exception of the weather, a model of what a Championship meeting can be.

As always, the Wakefield Trophy gained considerable support from far and wide, and nineteen nations sent in entries numbering 63, but in the event the single entry from Dr. Sultan of Israel failed to appear, and four failed to return any score on the field for one reason or another.

Following reception day (which included a most interesting trip down the local coal mine—with an illustrated lecture in a cinema some 300 ft. underground) processing was carried out in the gymnasium of the local school, which also accommodated the competitors in classrooms converted into dormitories. Feeding was just around the corner in the Stadtshotel, this arrangement being ideal for briefing and other announcements required from time to time.

Many old, and some new, friends were soon met, and the chit-chat flowed endlessly throughout the day in both the gym and on the flying field, situated about a mile from the school. Processing progressed with commendable smoothness, Mr. Dillman's team working with diligence to clear most of the entry in short order. Many models came extremely close to the maximum specification, but the only controversy arose on the question of that ever-vexed problem of "three-point" standing, and a new poser for the authorities when the Italian contingent wished to process several extra propellers for their machines.

Bausch of Holland had to modify his machine before it satisfied the officials that it could stand properly on three points, and it is our hope that should the "optional hand launch" proposition fail, the F.A.I. will make some definitive regulations on this ever present controversy. Also with the Italian request—though their application was ruled out—we feel there is a good point here that requires study, for surely it should be possible for a competitor to employ a propeller suitable to the conditions of the day. This latitude is permitted with power models, and we see no real reason why it should not also apply to Wakefields.

Although entries have been received from Guatemala before, it was a very pleasant surprise to meet the live wire of that Republic's modelling fraternity, "Bob" Bobkowski, but we had to wait until the morning of the contest before welcoming the Russian contingent, which had arrived at Hoganas in the very early hours.

A precursory study of models during processing indicated that design in general followed the usual pattern, and with one or two notable exceptions were very much alike. Bobkowski's models were somewhat "supersonic" in looks, with the tailplane mounted on top of a severely sweptback fin; Cheurlot of France again showed his W-plan wing form and tiny butterfly tail at the end of an extremely long fuselage; whilst Cizek (Czechoslovakia) had a beautifully proportioned model of

quite orthodox pattern, but built with the touch of a master. Cizek prefers to keep to a basic design, improving in detail with each new model, and the result is a gem.

Test flying was carried out most of the day in quite good weather, but the limitations of the airfield did not encourage all-out trials. Formed of two long grass runways in X formation, the field is bounded on one side by the town, on another by the mines, and the coastline on a third. In the remaining direction a long stretch of flat retrieving country caused all hopes to be centred on wind direction for the following day, for an off-shore drift would have been fatal.

Such prayers were not to be answered, however, for the morning of the contest dawned with a strong breeze whistling around the editorial caravan, which was conveniently parked on the aerodrome, and a quick look outside showed that the direction of drift would take models straight towards the town! Competitors, who had been called at 6 a.m., and officials who had been dragged out half an hour earlier, were soon appearing through the gates, and in a commendably short space of time the well-planned contest area had been marked out, teams settled into their allotted places, and the contest got under way promptly at 7.30 a.m.

Immediate interest, however, was in the models displayed by our Russian friends, and keen appreciation was evinced at the high standard of workmanship embodied in the long-fuselage machines being prepared for battle. By British standards the structures are highly complicated, and, employing various reeds and grasses instead of balsa, obviously take much longer to build than those we are used to. The resulting structure is extremely strong and flexible, the advantages of this being amply demonstrated during the contest when knocks were taken that would have put the average balsa job out of commission.

With 1½ hours devoted to each round, team managers were required to get two men through in each ½-round period, and once the entry had got used to the system, things went with a swing. Before we knew where we were, the first round was almost over and a hasty check showed that the strong breeze was going to make this a "timekeepers' contest". Many models were lost to sight before a maximum was gained, notable among these being Hughie O'Donnell, who lost two seconds when his model disappeared behind a belt of trees, and

23-year-old Lennart Petersson holds the coveted Trophy, flanked by Anders Hakansson (proxy for Kothe) and 3rd-placemen Erik Knudsen (Denmark) and John O'Donnell. Tie meant additional medal and prize to ensure equal treatment

Smolders of Holland, who lost three seconds under similar circumstances.

Despite the strong drift, the end of Round 1 saw no less than 17 competitors with maximum scores on the board, and we anticipated another fly-off for a World Championship. Sterling work was being put in by the Swedish proxy fliers, such well-known Wakefielders as Aarne Blomgren (twice winner of the Trophy) who flew Cliff Montplaisir's machine, and Hakansson with Kothe's model being outstanding.

The second round commenced at 9 a.m., but Bluhm (France), MacAuley (New Zealand) and four others had failed to return any score, among these being Alan King (1954 winner) who was flying proxy for his countryman Bird. The model, an all-balsa monocoque type, had given persistent troubles during test flying the day before, and Alan was obviously not at all happy with it.

With conditions varying between heavy overcast and sunny patches, Round 2 saw generally more consistent times recorded, and a total of 18 maxes were chalked up, this being the biggest batch of the contest. The wind, however, plagued many on the take-off boards, and many a good model hit the dust never to fly again. The Russians, who had a perfect score on the chart at the end of Round 1 saw both Smirnov and Kolpakov drop from the leader board, but they still retained their lead on

2. Hakansson helps on the winder, with t.m. Gerry Ritz taking the strain. 3. "Professor" Babkowski of Guatemala sports his unique swept-fin model—and his famous grin. 4. "W" plan wing on long sheeted fuselage submitted by Marc Cheurlot. Team-mate Guilloteau sported similar wing with butterfly tail

5. Kolpakov sets his long fuselage model on its way. Russian models were marvels of ingenuity. 6. Russian pits were centre of interest throughout the contest. 7. 17-year-old K. Hertsch will bear watching. 1956 German champ., was unable to maintain promising start, finished 21st. 8. Radislav Cisek (Czech.) had one of the best proportioned machines at the contest. 9. C. Burger (Holland) got down to launching; most adopted "stand-over" attitude.

the team board, a scant seven seconds ahead of the Italians, who had come up from fifth position.

John O'Donnell had managed a second maximum, but got his model sadly bent on the roof of a house in the process; brother Hugh again missed a maximum by five seconds behind the same belt of trees; Lefever—plagued by broken motors—had improved on his 98 second first flight with a maximum; and Revell brought up the rear of the British contingent with 2 : 27 in comparison with his First Round 2 : 21. At the end of this round nine men figured on the leader board with double maxes, Russia, America and Italy having two each, and Sweden, Germany and Great Britain still having single chances. The German youngster, 17-year-old Hertsch, 1956 national champion in this class, will require watching in the near future, for he has a skill and technique rare in so young a modeller, and we forecast that his name will crop up for many years where the Wakefield is contested.

Round 3 was marred by occasional showers of rain, and the gusty conditions did not improve matters—or some tempers! Blomqvist, flying well for Gordon of Canada, saw the model prang itself out of the contest, and poor Matveev came off the leader board with a zero score for the round, which is hard luck in any language. Ten men only managed to record top scores in this period, and Kolb, Scardicchio and Hertsch joined Matveev in their descent from the leaders. However, there is no truer word than that a contest is never over until the last round, and a lunch break occurred with things still very much in the balance.

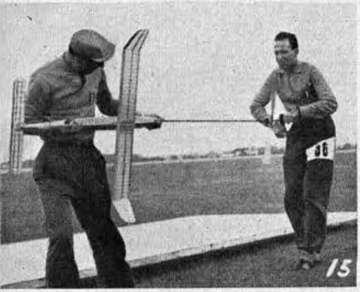
Round 4 took place from 13 : 00 to 14 : 30, and was to prove virtually the decider. The sky darkened with storm clouds, and the wind gusted alarmingly at ground level, with the inevitable result that many chances were spoiled. Proxy fliers battled on with their charges, and no praise is too high for their efforts, Hakansson maintaining Kothe's model at the top of the list in company with Petersson and Fea. Blomgren gained a further maximum for Montplaisir to bring him much further up the list, and Matveev scored another max to compensate in part for his unfortunate third round failure.

British hopes took a dive here, for John O'Donnell, after sheltering under a canopy of raincoats and umbrellas for a rain squall to pass, launched his model well, only to catch a patch of extreme turbulence at the end of the field and lost 29 seconds in the process. Hugh scored his only maximum of the contest at this stage, and Lefever improved his score with a similar time. Revell plodded along dogged with power troubles, for no matter what he did he could not get altitude under the model.

With the weather steadily worsening, and the rain squalls almost continuous, the final round got under way with three men with unspoilt scores, and America as leading team—a most commendable effort with half their entry proxy flown. Flying was necessarily spasmodic in this round, for only the foolhardy—or those with no cares left—would aim

10. Altmann (Germany) was in 7-man fly-off last year. 11. Singing in the rain! Geoff. Lefever and Co make their way out for the final fling. 12. Jerry Kolb (U.S.A.) juggles the fan into position, assisted by Gil Coughlin. 13. Haag (Sweden and lady helper oblige the numerous photographers in round three

THE WINNER. 14. Petersson, member of the successful Gamen club and modelling for ten years, prepares for 4th flight, with t.m. combating the high wind. 15. Alinari (Italy) turns the handle whilst Scardicchio acts as anchor man. 16. Arne Blomgren (1952 winner) readies Cliff Montplaisirs' model under watchful eye of t.m. Rita.



17. H. Schmiterlow, proxy for Leong (New Zealand), had plenty of trouble with his far travelled charge. 18. S. Nurminen prepares for the fray. 19. Ivannikov lights the fit with Smirnov holding the Russian hope. 20. Lefever uses the short run of the excellent take-off board. Was dogged by motor troubles for much of the contest.

to take-off during the frequent bad spells, and all eyes were on Petersson, Hakansson and Fea.

The disconsolate countenance of team manager Carlo Tione showed that all was not well. Fea had lost both main and reserve models in his four flights to date, and everything depended on one being returned before the closing time for the contest! Our sympathies were definitely with the little Italian, for Fea has been a most consistent Wakefield flyer in the post war years, and has always put up a sound performance.

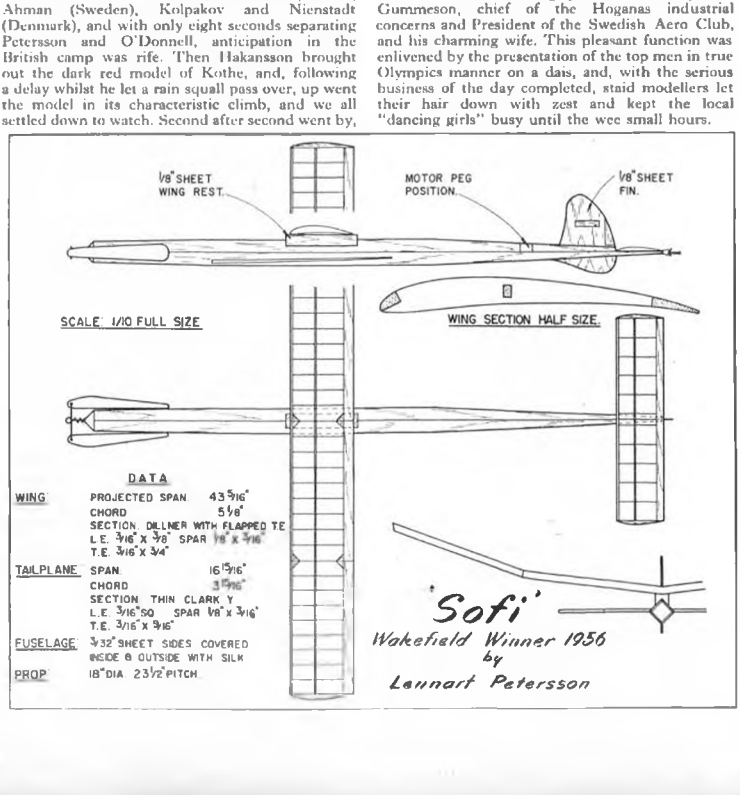
Attention was now on Petersson as he wound up for his final effort, and his timekeepers maintained the model in sight for 2 : 39. Excitement was now at fever pitch, for the proxy-flown American model could possibly better this, and if Fea's model was returned . . . ?

John O'Donnell racked up another maximum, as did Knudsen of Denmark, Smirnov (Russia), Ahman (Sweden), Kolpakov and Nienstadt (Denmark), and with only eight seconds separating Petersson and O'Donnell, anticipation in the British camp was rife. Then Hakansson brought out the dark red model of Kothe, and, following a delay whilst he let a rain squall pass over, up went the model in its characteristic climb, and we all settled down to watch. Second after second went by, and when clocked off it was seen that the score was 2 : 34, placing him between Petersson and the British entry.

We now had to wait out time to see whether the fates would be kind to Fea. It was not to be, however, and Petersson was declared the winner, thus giving Sweden her third win of the coveted Wakefield Trophy, with the American model in second place, and Knudsen of Denmark joining John O'Donnell in third place. The consistent efforts of her team also gave Sweden the team prize, with Russia in second place just a scant second ahead of Great Britain.

Space does not allow of all the notations we would like to make, but full credit goes to the organisation with its superb equipment for a contest memorable in the history of this famous Trophy.

Activities culminated at the Hoganasbolaget, the celebration dinner being presided over by Mr. Gummeson, chief of the Hoganas industrial concerns and President of the Swedish Aero Club, and his charming wife. This pleasant function was enlivened by the presentation of the top men in true Olympics manner on a dais, and, with the serious business of the day completed, staid modellers let their hair down with zest and kept the local "dancing girls" busy until the wee small hours.



WAKEFIELD RESULTS

			1	2	3	4	5	Total
1	Petersson, L.	Sweden	180	180	180	180	159	879
2	Kothe, H. *	U.S.A.	180	180	180	180	154	874
3	O'Donnell, John	Great Britain	180	180	180	151	180	871
3	Knudsen, Erik	Denmark	180	166	180	165	180	871
5	Smirnov, E.	Russia	180	163	167	160	180	850
6	O'Donnell, H.	Great 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	Roth, J.	U.S.A.	180	180	110	163	155	788
14	Scardicchio, V.	Italy	180	180	121	121	118	785
15	Montplaisir, C. *	U.S.A.	139	180	180	180	103	782
16	Cizek, R.	Czechoslovakia	180	171	176	103	136	766
17	Lefever, G. J.	Great Britain	98	180	147	180	145	750
18	Alinari, A.	Italy	156	180	111	130	146	723
19	Giudici, C.	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, L.	Germany	160	142	180	165	141	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	Homola, J.	Czechoslovakia	146	69	124	180	109	628
31	Coughlin, G.	U.S.A.	158	127	112	137	93	627
32	Heidmuller, B. *	Germany	150	129	54	180	100	613
33	Loates, *	Canada	89	156	180	180	—	605
34	Revell, H.	Great Britain	141	147	91	104	121	604
35	Bausch, L.	Holland	110	133	134	139	87	603
36	Matvejev, V.	Russia	180	180	—	180	—	540
37	Wong, D. *	New Zealand	59	180	120	82	37	518
38	Talko, S.	Finland	93	153	141	130	—	517
39	Lifka, L.	Czechoslovakia	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	Nieminen, S.	Finland	44	151	113	93	67	468
45	Heesmans, R.	Holland	122	107	60	39	136	464
46	Widell, H. E.	Denmark	161	75	169	45	—	450
47	Nonaka, Y. *	Japan	137	94	121	23	58	433
48	Allara, A. *	Guatemala	73	117	121	150	—	421
49	Mackenzie, D. *	Canada	132	—	145	127	—	404
50	Popelar, V.	Czechoslovakia	158	—	—	89	140	387
51	Viggiano, O. *	Argentine	40	167	162	—	—	369
52	Baker, B.	Australia	180	—	159	—	—	339
53	Gordon, R. *	Canada	180	139	—	—	—	319
54	Nonaka, S. *	Japan	143	92	—	—	—	235
55	Leong, A. *	New Zealand	93	85	—	—	—	178
56	Groves, K. *	Canada	68	—	78	—	—	146
57	Heirset, J.	Norway	86	—	—	—	—	86
58	Macaulay, A. *	New Zealand	—	—	23	—	—	23
59	Bird, R. *	Australia	—	—	—	—	—	—
60	Pardo, J. *	Guatemala	—	—	—	—	—	—
61	Roots, B. *	New Zealand	—	—	—	—	—	—
62	Cheurlot, M	France	—	—	—	—	—	—

(* denotes Proxy Bowl)

TEAMS

1	Sweden	525	990	1475	2015	2509
2	Russia	540	1063	1499	1970	2470
3	Great Britain	499	1034	1460	1971	2469
4	U.S.A.	518	1039	1509	2032	2444
5	Italy	516	1056	1474	1964	2228
6	Denmark	490	954	1371	1720	2204
7	Germany	519	988	1374	1781	2067
8	Finland	409	886	1344	1732	2000
9	France	264	723	1083	1431	1919
10	Czechoslovakia	484	836	1224	1595	1909
11	Holland	431	836	1229	1528	1880
12	Canada	401	696	1099	1328	1328
13	Guatemala	159	456	744	894	894
14	Norway	186	366	500	631	729
15	New Zealand	192	457	600	687	724
16	Japan	280	466	587	610	668
17	Argentine	40	207	369	369	369
18	Australia	180	180	339	339	339

21. Bausch (Holland) confers re modifications to conform with three-point stand requirements, watched by chief processor Mr. Dillman (bow tie). 22. Matvejev puts the last few turns on his interesting model, Kolpakov on the receiving end. 23. Malcolm Young and t.m. Bob Copland assist Hugh O'Donnell to prepare for 2nd round. 24. Farewell in Sweden after a most interesting contest. Inaxies Bond Baker and Alan King travelled with the British party

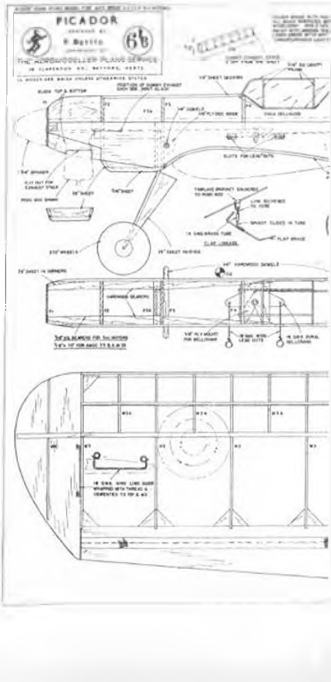
A FULLY AEROBATIC SEMI-SCALE CONTROL LINE DESIGN BASED ON THE HISPANO AVIATION Ha 1109 SPANISH FIGHTER

. . . from Barcelona

F. BATLLO'S PICADOR

REPORTING THIS YEAR'S VIIth Criterium of Europe in the June issue we stated that the nicest of the stunt models present was Fernand Batllo's semi-scale Spanish fighter with a Fox 35. Admittedly he did not win: but that was no real fault of either the pilot or the model, it was simply that the engine was for once off form. In the air it looks like a Messerschmitt 109—the machine built in Spain as the Hispano Ha 1109, and on the ground its workmanlike features are quickly appreciated by the stunt enthusiasts.

Detachable wing, full span flaps, long tail moment, light and ultra-simple structure all add up to a design that will turn on a sixpence and offer scintillating performance with any engine from the powerful 3·5 c.c. diesels to the glowplug American "35"s. The originals (many have been built by the Barcelona club flyers) are coloured in Spanish Air Force Dark Glossy Green upper surfaces, with Light Grey undersides. The rudder is all white with the black diagonal cross, and identification roundels are Red, Yellow, Red. Out in sunny Spain the lads put in many hours of flying and we count ourselves lucky in being able to present this particular design for your enjoyment. We requested drawings when in Brussels at the European Championships, but apparently they had no time to prepare a special set of plans for publication. This proved no problem to Fernand Batllo's clubmate Jose Garcia Flegenheimer, for he simply collected the pieces of a Picador beyond repair, parcelled them in a bundle and took them along to Barcelona Airport. They arrived the same day in London by British European Airways Viscount service! So we prepared the A.P.S. plan from a dissected model.



Construction

Although from a source where balsa is not in good supply, and having a wing rib spacing that indicates use of hardwoods, the Picador is definitely a lightweight all-balsa model. Spars on the model sent to us are not even medium grade, might even be termed soft, while the sheet for the fuselage definitely belongs to the soft category. This is a clue to the reason for high performance. A light model means low wing loading and smaller looping radius, so bear this in mind when selecting materials.

Two basic sides for the fuselage are cut from ¼-in. sheet and used to locate formers F6 and F7 (with tailwheel) when placed upside down on a building board with the rear fuselage overhanging the edge. This aligns the sides perfectly. Now make up the engine bearer

assembly with F2 and F3 after the undercarriage has been assembled on to the latter. Be careful to see that you have the correct engine bearer positions according to the mounting lug levels of the engine to be used. If the sides and rear formers are set, the nose can now be drawn together and bearer assembly added followed by F4 and F5, then the circular disc F1. Make up the bellcrank unit on its ply base, complete with lead-out wires, and fit up to the underneath of the bearers with slots in the sides for ample movement where wires project. Now add the fin with appropriate slot cut to take the tailplane, ensuring that this is exactly parallel to the top of the sides.

We can turn now to the tailplane and elevator, a simple $\frac{1}{16}$-in. sheet assembly with a cloth hinge as detailed for the flaps. The hardwood spar across the elevators and wire joiner should be securely glued with a slow drying adhesive. Fit the horn, and mount the unit on the fin with soft wire strutting to resemble the fullsize, and also take care of side wobble on the narrow fixing. Then add the rudder at between 5 and 10 degrees offset. Link the bellcrank and elevator with the pushrod.

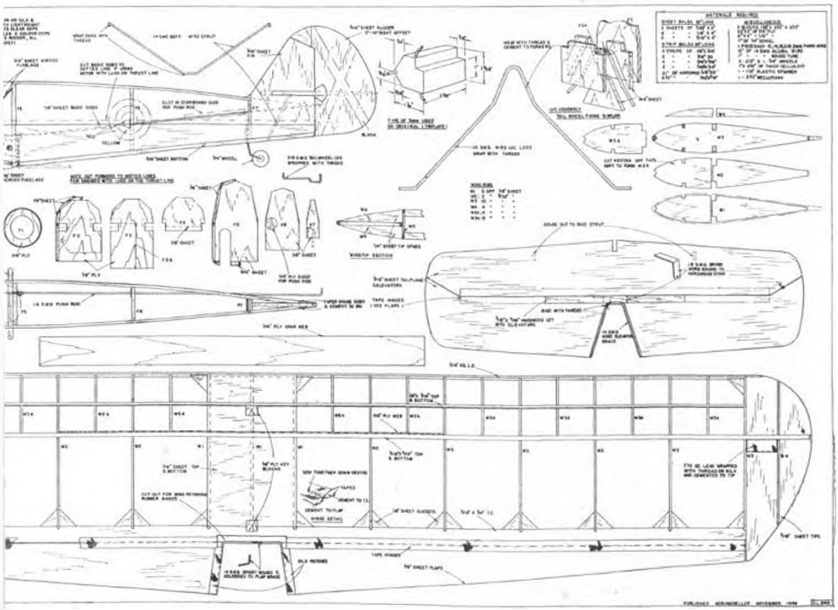
Complete the fuselage with top and bottom sheeting, cabin detail and tank installation. Nose cowling blocks can be detachable as desired, though most of the cylinder is exposed for maintenance access. Before sheeting the wing seat, add the retaining dowels and ply washers.

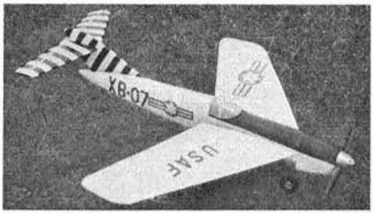
Being symmetrical, the wing has to be made with the spars and edges supported up from the building board by the required distance. Best method is to fit all ribs to the lower $\frac{1}{16}$ in. x $\frac{1}{16}$ in. spar first, then to work on the upper spar, the leading edge and trailing edge in that order. Half ribs, which are divided by the full depth spar in the centre portion can then be fitted before the two auxiliary spars and sheeting.

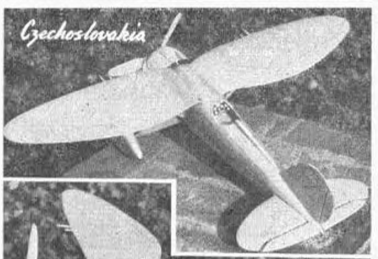
Cover the fuselage and tail with a lightweight tissue and treat with sanding sealer to obtain a fine surface. Wings can be silk covered for maximum durability, or heavyweight Modelspan applied and given liberal coats of clear dope before colouring.

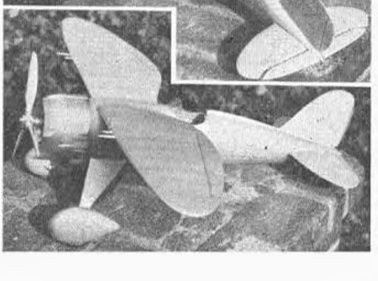
Flaps hook up with the bellcrank and pushrod by means of a plug in spigot, and final adjustment for neutral position is obtained by bending the spigot relative to the flaps.

FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE PRICE 6/6 POST FREE FROM AEROMODELLER PLANS SERVICE
PLEASE QUOTE PLAN NUMBER CL 640 WHEN PLACING YOUR ORDER









WORLD NEWS

A STORY OF persistant determination despite physical handicap came our way this month from Lahore, **Pakistan.** Mohammed Junaid, Hon. Sec. of the Lahore M.A.C. told us of Mumtaz Ahmed, whose photo is seen on the page opposite and who was unfortunate enough to be born deaf and dumb. Mr. Ahmed understands little English, or even much of his own national language, Urdu, but he is a very good artist and now works professionally in that capacity. As an aeromodeller, he tunes his Mills diesel by looking at the propeller from one side, keeping his hand on the compression control to adjust the revs. He is said to be as good as any other modeller in obtaining optimum power from his engine. Good luck to Mr. Ahmed!

Materials, notably a consignment of balsa have recently arrived in Pakistan to encourage further activities, and now that the rainy season is over, we shall be hearing more from this country.

R. Beck, the 2·5 c.c. speed champion of **Hungary** has recently established a new National record of 119·3 m.p.h., using a modified rear disc valve Super Tigre, but he was beaten by the **Czechoslovakian** J. Sladky in the "Peace Cup" control line event on August 12 at Budapest. This was an International with teams from Czecho. and leading modelling communities in Hungary. Sladky was top in 2·5 with 119 m.p.h., Horwarth of Hungary top in 5 c.c. with 135 m.p.h. One should remember that these speeds usually reflect flying without use of potent additives such as Nitro-Methane to the fuel and they do represent considerable tuning effort in the engine department. First reports of the **U.S.A.** Nationals at Dallas, mention speeds that are simply tremendous, like Tulsa's Bob Launderdale, who raised the Class C (10 c.c.) record to 170·71 with a McCoy 60 and 8¾×12 in. prop. Jim Paysen used the revolutionary Fox 29R plain bearing engine to win 5 c.c. Open with 148·09 m.p.h. (more on this motor next month—and the little ·8 c.c. glowplug engines were approaching the 100 m.p.h. mark.

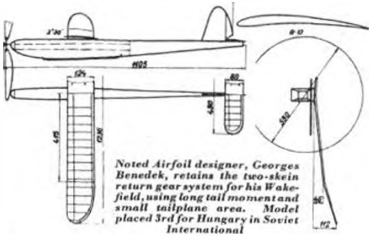
Highlights of this huge meeting were the introduction of the new PAA event for Jetex (and Japanese copies?) with a special junior event for under-16's, limited to the 50 size unit and little payload. Then there was Clipper Cargo, won by National Champ Woody Blanchard, who Thermal Hopper'd 42 ounces of detachable ballast and dummy off the ground, plus a full size show of the

Swept wing controliner at top from Germany is powered by Webra Mach.1 and is 35 in. span. Ouch—those six pointed stars are enough to spoil the whole effect—somebody show the Dusseldorf modellers a U.S.A.F. insigne please! They could look at the next pair of photos showing F. W. Biesterfeld and his 36 in. 3-channel E.D. equiped semi-scale delta that has appeared on British T.V. and astounded onlookers at the German Nats. Has a Jap Mac-29 engine, silver coloured top, black undersides and orange rudder, elevons. What a beauty—we hope others follow his lead. Scale Avia 4102 fighter from Czechoslovakia is 1/12th full size, has a 2.5 c.c. diesel and is 31 in. span. Built by J. Cerveny, it is control-line and apparently uses a scale three blade prop.

Gunter Malbaum holds his basic tri-blade helicopter unit which he recently used to establish a new German record. Runso Yanaginarhi of Sapporo, Japan, seen with his latest Wakefield. APS Delta 1, made by Mumtaz Ahmed, who is absolutely deaf and dumb. In Canada, Barry Haisman holds the Wakefield record with top model, later development by Don Mackenzie, below, was in Sweden

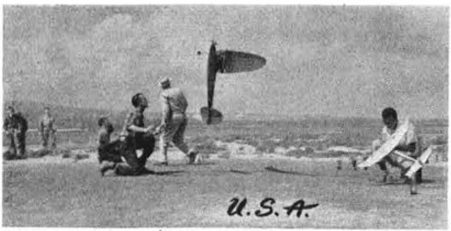
latest jets, including the Crusader from Chance Vought's aerodrome next door.

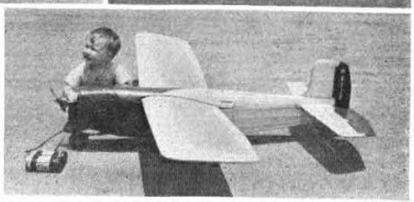
Mono-line dominated the speed circles, as is only natural for it comes from Texas, and the thermals were a main feature of free flight. Some gliders lifted their winches as high as 200 ft., and one disappeared into the clear blue sky straight up (not with the winch) at 1:45! Average temperature each day was over the 100 Farenheit mark, so the model chasers lost a lot of weight during the meeting. Most unlucky were the indoor men, who sweltered in Will Rogers, Memorial Coliseum with all doors closed and the air conditioning turned off. Balsa soaked up the moisture and tissue flopped while microfilm shrank flimsy structures.



Noted Airfoil designer, Georges Benedek, retains the two-skein return gear system for his Wakefield, using long tail moment and small tailplane area. Model placed 3rd for Hungary in Soviet International

Four views of Californian flying. Top left: Harry Gould, noted power flyer releases his Tarp 29 Sailplane while at right, Phil Kraft, a diesel exponent, does the same for his Max-25 "Hi-Fli". At bottom is Howard Yonkers' latest scale model for the Dynajet—remember his Vampire? This time a Russian MiG 15. Right is Colby Kvitt's son asking pop when he should start up the motor on his large multi-channel r/c model

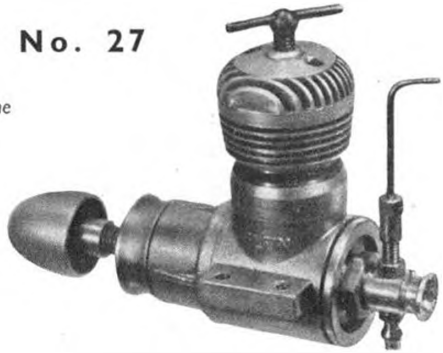




Engine Analysis No. 27

latest and improved version of the

ELFIN 2.49 BR

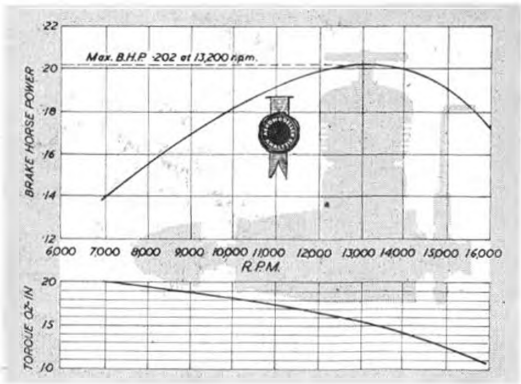


reviewed by R. H. Warring

THE NEW ELFIN 2.49 B.R. is a remarkably well thought out, cleverly engineered job incorporating reed valve induction, which Aerol Engineering now appear to have adopted as a standard and designate a "clack" valve. They have considerably "prettied up" the crankcase and general appearance over the earlier B.R. engines. Our own tests showed the 2.49 B.R. performance to be just about on a level with other current ball race 2.5 c.c. productions, after overcoming a few early difficulties.

The engine as first received showed up on initial tests to be some 1,000 r.p.m. *down* on good 2.5 c.c. performance on typical propeller sizes. It also had the characteristic of throwing as much fuel back out of the intake as it appeared to draw into the crankcase, pointing to the fact that the reed valve was too weak for the job. Further examination showed that the reed was actually fractured and so tests were suspended pending the arrival of a replacement. In the meantime some runs were undertaken with a "home made" reed unit which indicated that performance would be quite good with a stronger reed.

The replacement unit as received from the manufacturers incorporated two reed elements—i.e., two standard thin reeds mounted one on top of the other, giving additional stiffness. This completely cured the original trouble and, in fact, gave a slightly superior performance on the same propeller sizes to the "home made" unit just mentioned. Tested on just the single reed, however, there was still an appreciable blow back and some loss of power. Whether or not a double reed is to be a standard fitment on this engine is not known, but the addition of a second reed would appear to be a cure for any existing Elfin 2.49 B.R.'s which do suffer from excessive "blow back".



SPECIFICATION

Bore: .5675 in.
Stroke: .600 in.
Displacement: 2.486 c.c. (.1518 cu. in.)
Bore/Stroke ratio: .945
Bare weight: 24 ounces
Max. B.H.P.: .202 at 13,200 r.p.m.
Power rating: .0815 B.H.P. per c.c.
Power/weight ratio: .0385 B.H.P. per ounce

Material Specification

Crankcase: Light alloy pressure die casting (scratch brush finished)
Cylinder: Hardened steel
Crankshaft: Hardened steel, ground between centres
Crankshaft bearing: Two Hoffman ball races
Connecting rod: Turned dural
Piston: Cast iron, honed
Contra-piston: Cast iron
Cylinder jacket and head: Light alloy, machined

Manufacturers:

Aerol Engineering, Henry Street, Liverpool 13. Retail price £3 19s. 8d. inc. P.T.

Starting and handling characteristics of the 2.49 B.R. were quite delightful. Starting rich (finger choking) with the compression well slackened off, no difficulty was experienced in hand starting on all propeller sizes down to 6 inches diameter. Due to the type of induction the Elfin will, of course, start and run equally well in either direction. Strangely enough, reverse direction starting occurred more times at lower speeds (i.e., with larger propellers) than at high speed loads on our tests, although this could be peculiar to individual starting technique. The engine is by no means as happy running in the reverse direction and revs are well down in all cases (with a marked difference in engine note).

Control lag

Needle valve control is very good. There is a very short lag between adjustment and picking up to the new setting—sufficient lag to recover without the engine stopping if the mixture is weakened off too much, but with a minimum of delay in settling down to any particular setting. Compression control, on the other hand, we found a little more difficult to adjust for optimum running conditions, particularly on wooden propellers around 12,000 r.p.m.

At around this speed there was a definite tendency for missing to occur which could not be eliminated by increasing the compression. In fact, at times the best setting was obtained by reducing the compression at this stage. This misfiring characteristic appeared rather more like momentary starvation of fuel—the engine cutting out and then picking up again so that it tended to run in bursts—the sort of running normally indicative of lack of compression and curable by increasing the compression, although not so in this case.

It would appear therefore, that this was an induction characteristic.

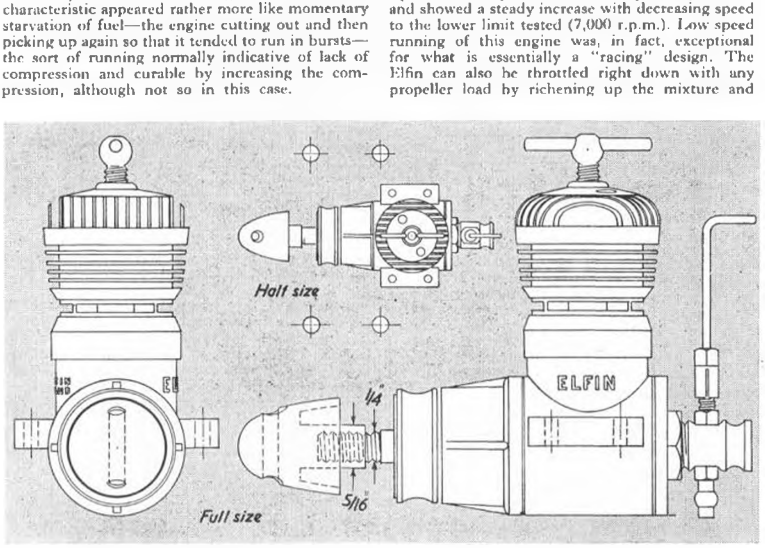
On the whole we would say that easy as it is to start, the Elfin 2.9 B.R. was not particularly easy to adjust for consistent performance at optimum settings over the higher end of the speed range with wooden propellers. Yet with plastic propellers, performance was quite smooth over a similar range.

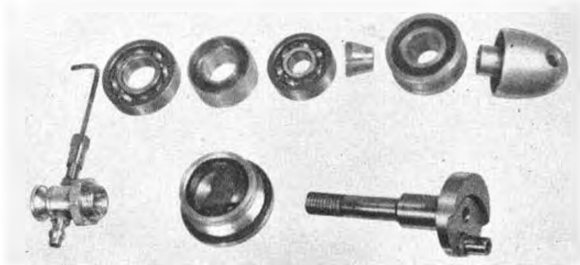
PROPELLER R.P.M. FIGURES

Propeller dia. pitch	*r.p.m.*	
9 x 4	9,800	
8 x 8	8,900	
8 x 6	10,100	
8 x 5	11,750	all
8 x 4	12,800	Stunt
7 x 6	13,000	wooden
7 x 4	14,300	props.
8 x 9 (TR)	8,600	
8 x 8 (TR)	10,100	
7 x 9 (TR)	10,100	
10 x 6	8,300	
9 x 6	9,500	all
8 x 8	7,200	Frog
8 x 6	10,100	Nylon
8 x 5	11,300	props.

The Elfin makes a remarkably "powerful" noise and is also one of the very few diesels which we have come across which occasionally shower out sparks from the exhaust. The cylinder gets extremely hot after a short period of running which can make adjustment of the compression a painful process.

Peak r.p.m. derived from the test data was 13,200 with the power output nicely flat and of the order of .20 B.H.P. between 12,000 and 14,000 r.p.m. The torque curve was exceptionally smooth and showed a steady increase with decreasing speed to the lower limit tested (7,000 r.p.m.). Low speed running of this engine was, in fact, exceptional for what is essentially a "racing" design. The Elfin can also be throttled right down with any propeller load by richening up the mixture and





Crankshaft and carburettor assembly at left are two items of special technical interest. The induction tube, with commendable short overhang, can be adjusted to suit any needle valve angle. Reeds are retained by a circlip in the rear cover for the crankcase. Along the top are the S.1 and S.3 type ballraces, with alloy spacer between, then tapered drive washer seating, the actual drive washer and the spinner. Diagram on page 585 gives an idea of the use of a circlip and spacer for ballrace location

slackening off the compression and can be held in a slow "tick over".

Novel ball-race assembly

Constructionally the 2.49 B.R. is a most interesting job. Starting with the crankcase, this is a clean pressure die casting in light alloy machined right through to take the ball races and threaded for the backplate and cylinder. The rear ball race is ½ in. bore press fitted into a machined housing. The front race is ¼ in. bore, pressing into the front of the crankcase and locating against a spring circlip fitted into a machined groove. Between the two races is located an aluminium spacer or distance piece, rather like a loosely fitted bushing, whose main purpose would appear to be to act as an oil seal. The shaft is, in fact, in light rubbing contact with this spacer.

The crankshaft is a solid looking affair, machined in two steps of ½ in. and ¼ in. diameter, rather heavily undercut at both the change of section and the end of the threaded length (¼ B.S.F.). These undercuts are obviously an aid for grinding, the finished shaft being ground between centres, although theoretically representing three stress raisers or weak points. The crank web is of substantial thickness, machined away to a form balance weight. The crank pin diameter is ⅜ in.

The hardened steel cylinder is of quite generous wall thickness of conventional form with threaded top and bottom sections and exhaust flange. Four exhaust ports of moderate depth are machined in this flange. Four by-pass ports are machined on the inside of the cylinder terminating just below the level of the exhaust, somewhat reminiscent of the earliest Elfin products.

The cylinder screws into the crankcase casting, sealing with a gasket against an unmachined and relatively narrow rim. The cylinder jacket is a sliding fit over the cylinder (the outer plain length of the cylinder being ground) and locates over the top of the exhaust flange. A separate head then screws down over the top of the cylinder to complete the assembly and lock the jacket in place. The result is a neat, cleverly designed unit, which has enabled the apparent height of a long stroke engine to be kept quite low. The actual hold down area for the jacket is quite small, but appears adequate. The cylinder is best tightened using a "C" spanner in the exhaust ports, although this can be done using pointed nose pliers inserted in the two holes in the head, should this unit work loose when running. The vibration level is reasonable (the piston is lighter than on previous models) and so the cylinder, if properly tightened initially, should stay in place although we did find a tendency for it to work loose at high speeds—rather beyond those which would normally be required in practice.

Reed valves

The crankcase back cover carries the choke tube, screwing into it and locked with a thin nut, and the reed valve(s). The latter are only .002 in. thick, of phosphor bronze (or possibly beryllium copper) consisting of a thin annulus with an integral flap covering the induction port. The reed is tensioned against the back face around the annulus by a light coil spring, the spring being anchored in the back cover with a circlip. The back cover seals against the unmachined back of the crankcase with a fairly thick gasket.

The choke tube is machined from light alloy to a good venturi shape with a definite parallel throat section. The needle valve itself, incidentally, is bent from a standard darning needle.

Summarising, we would rate the Elfin 2.49 B.R. as a design full of technical interest. There are a lot of individual parts and a lot of work in the production of these engines, backed by some sound thoughts on good engineering lines. Performance is up to the best of the current 2.5's, but our own experience was that it was difficult to maintain consistent running at some high speeds and light loads, for which we suspect the induction system. We may be wrong on this point. But if we have criticisms here we would certainly rate the starting characteristics excellent and flexibility on needle valve control first rate. The main difficulty we see is that with the construction being relatively intricate there is a distinct possibility of considerable variation in performance between different engines, unless exacting standards are maintained throughout.

CHANCE VOUGHT AIRCRAFT

F8U-1 Crusader

AEROPLANE IN OUTLINE Number 48

IF JET PIPE DIAMETER is to be accepted as a measure of performance, then the F8U-1 Crusader must be heralded as the fastest naval fighter in the world. It has an orifice that makes any European jet pipe (Gyron excluded) look like a tin-whistle against a tuba, and the recent 1,015·428 m.p.h. American record flight substantiates the assumption that much more than the claimed 10,000 pounds of thrust is produced by the after-burning Pratt and Whitney axial flow two-spool turbojet. By any standards, the Crusader is an amazing aeroplane, and it abounds in items of technical interest, some of which we are sure are still to be released.

First flown on March 25th, 1955, when it exceeded Mach 1 in level flight, the F8U-1 was initially revealed in June of that year as winning the contract for a shipboard fighter combining greatest possible speed consistent with carrier operating requirements, and the Crusader went into production in September. By April, 1956, the prototype completed carrier qualification trials on U.S.S. *Forrestal* and the production line was beginning to supply the first of the Gull Grey and White service aircraft, one of which is featured on the cover of this issue. What an achievement in development and what an unfortunate comparison it offers with the DH 110 and Supermarine 113 histories!

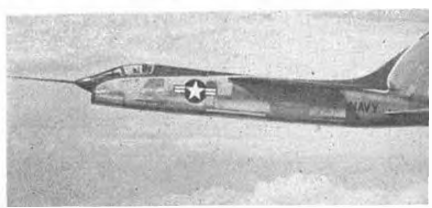
Britain can, however, take consolation in the fact that many of the technical features emanate from earlier experiments conducted on prototypes at Farnborough, and without the Steam Catapult and Angled Deck, the F8U-1 would lose much of its performance potential.

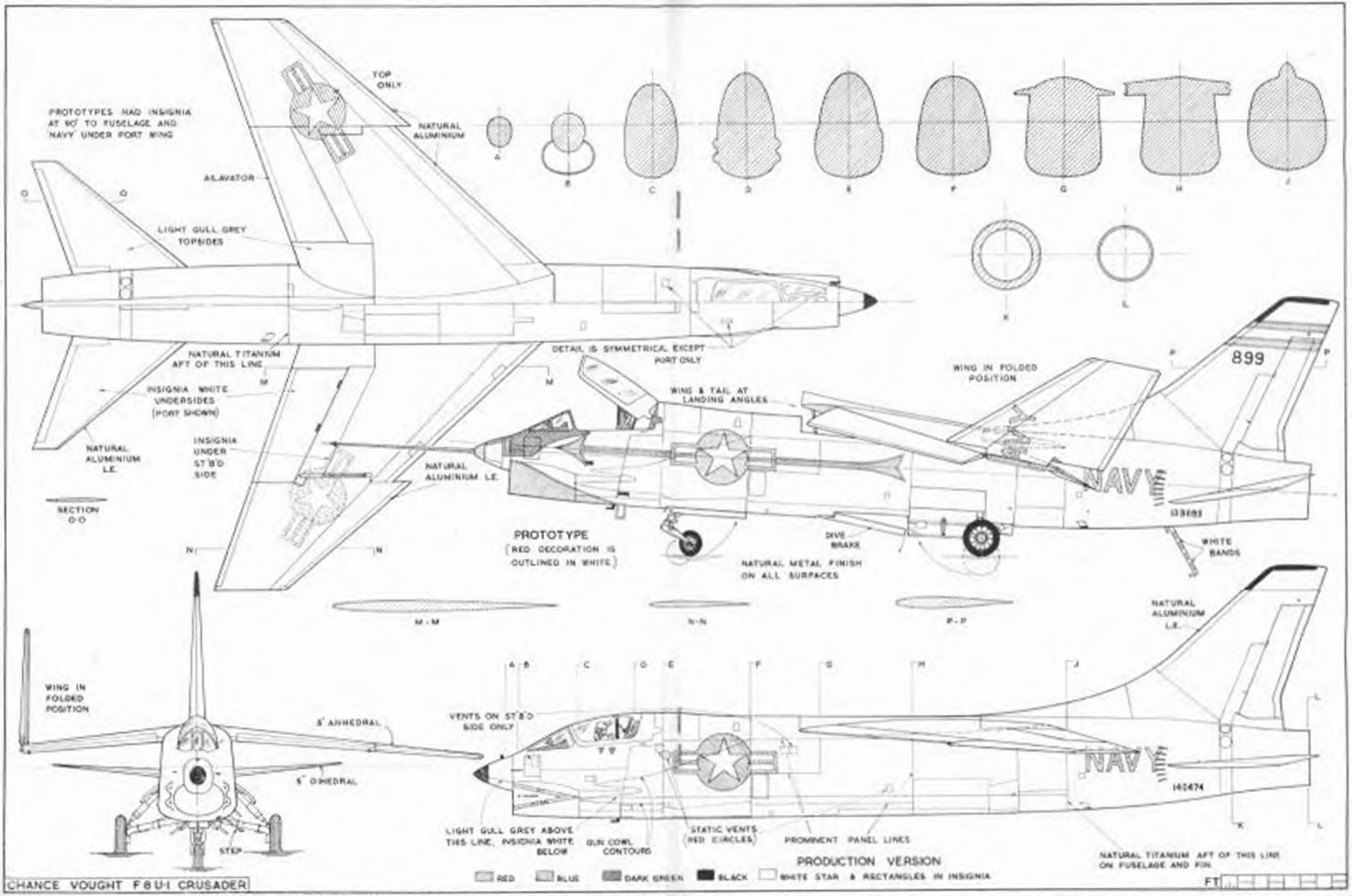
Most notable of the features is, of course, the two-position wing, an idea tried with great success on the Supermarine 322, S.24/37 and more commonly known as the "Dumbo". Using slots and flaps with an infinitely variable incidence changer, the wood and metal naval bomber was flown in 1943, six years after being designed, and too late to be of any use other than to demonstrate the value of the system. In America the XB-51 used the same device but did not proceed beyond the prototype stage. The Crusader has adopted it, applied a droop leading edge and combined ailerons and flaps, known as ailavators, and is apparently able to fly-on any carrier due to the favourable pilot view. Add to this the dihedralled slab tailplane, roots of which must certainly be an engineering achievement considering the mid-fuselage mounting, and the enormous fuselage and fin which are supported by Hunter-size wings—then one begins to realise how many eggs have been placed in a very profitable basket.

Knife edge intake for the 357, and probe mounted vane and pressure reading instruments are clear in this prototype view. Below left is the same machine tucking its main gear away in radius action, while at right is another prototype with varied decoration

On August 21st this year the Crusader was under strict Naval orders not to display its full potentialities; but at the same time to be flown fast enough to push the American speed record over the 1,000 m.p.h. mark. Commander "Duke" Windsor was pilot for this hotly debated flight which covered 400 miles and lasted 32 minutes, and there are many who doubt that any limitation was in fact applied. Full armament load of four 20 mm. fast-firing cannon was carried, fuel was "frozen" in a bath of dry ice to get a maximum in the fuselage tanks, and the flight made at 40,000 ft. with observation equipment tracking the course after the same style as that employed for the Fairey FD 2 record. Whether or not this speed figure indicates a service maximum is a matter for conjecture, the point that remains is that there are many Crusaders in the process of proving trials at the moment, and it will not be long before it sees service in the U.S. Navy's Carriers.

Span: 35 ft. 8 in. Length: 54 ft. 2¼ in. Height: 15 ft. 9 in.
Power: One Pratt & Whitney J-57-P4 with afterburner.





CHANCE VOUGHT F8U-1 CRUSADER

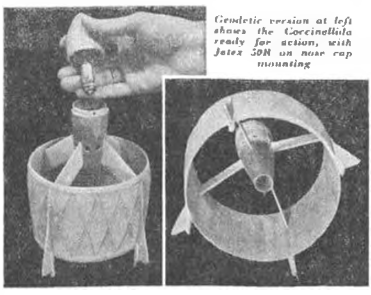
FT

Coccinellida

A vertical rising Coleopter for Jetex 50R by IAN GEDDES

THE BUREAU TECHNIQUE ZBOROWSKI, otherwise known as BTZ, at Brunoy in France, is a remarkable institute currently engaged in the development of vertical rising annular wing aircraft. Led by technicians with considerable research background in the German Jet and Guided Missile industry up to the time of Victory in Europe, the BTZ design force has relied greatly upon free-flying models for test purposes: but their plans for the future include both pure jet and airscrew propelled vehicles.

It was an article by A. R. Weyl, A.F.R.Ae.S. (whose "Dart" aircraft designs, notably the Kitten, are such favourites with scale modellers), in *Flight* of June 24th, 1955, which created much envelope and table cloth sketching in a certain Dublin coffee shop. The culprit was Ian Geddes, aided by Louis Finucane, whose initial inspirations were soon to take shape just as quickly as they could obtain a sheet of ⅛ in. balsa.



Geodetic version at left shows the Coccinellida ready for action, with Jetex 50R on nose cap mounting

Professor Weyl detailed the Coleopter so well in his "Without visible means of support" article that Ian was able to report success at the first firing of his model experiment: but quite obviously it was simply a straight up-and-down flight trajectory, and in the interests of science, and further experiment, he decided to strike directly at the BTZ headquarters for guidance on one or points. Back came more than expected. Data on model flight, thrust required, etc., and all from none other than Dipl.-Ing. H. v. Zborowski himself.

Clearly the answer to success was to build a variety of designs, as the heading photograph will show, and of the models, the little Coccinellida (Ladybird) with a Jetex Rocket motor gave the most inspiring flights.

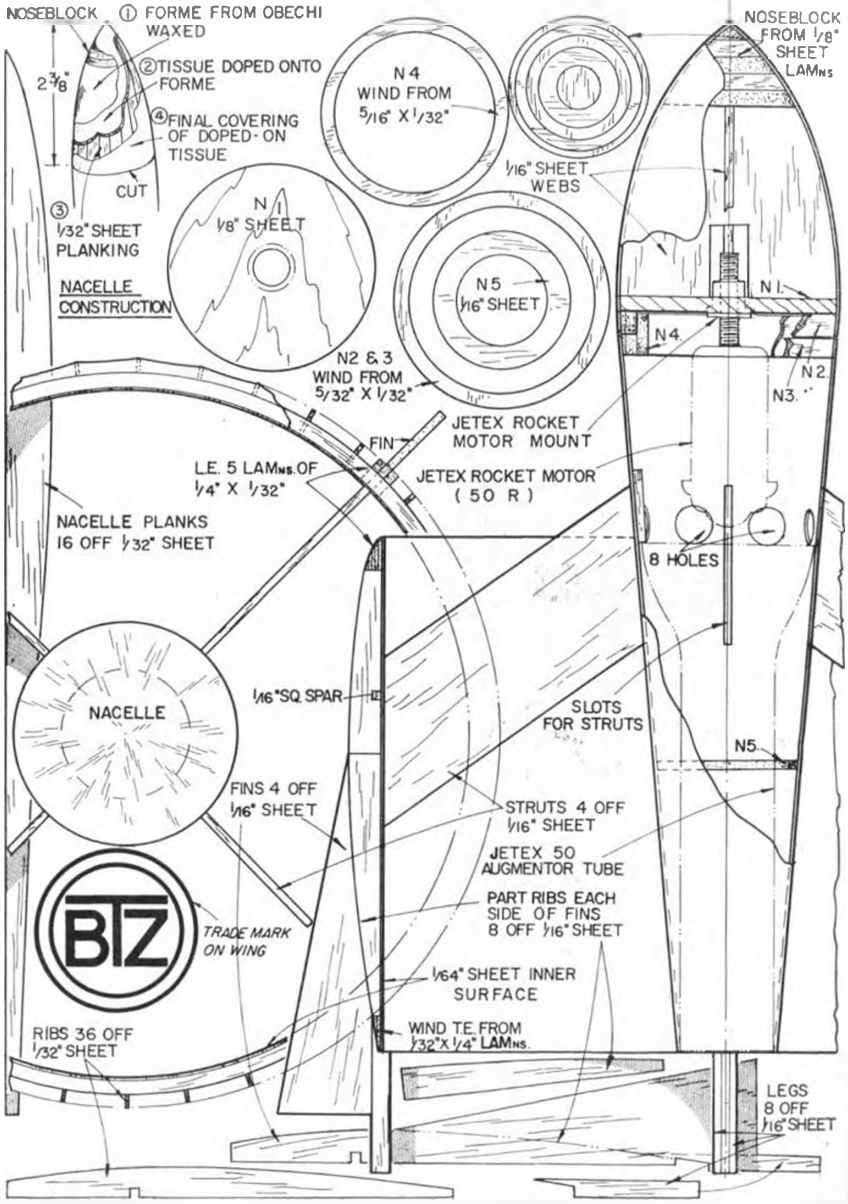
Without remote control one cannot expect transition to level gliding flight, although this is the ultimate aim, and may yet come with canard and other double ring-wing creations. Coccinellida will, however, make a spectacular ascent to more than 70 ft., and because of the light structure and crashproof sliding fit of the central nacelle on its four support struts, it never comes to any harm if it lands on grass.

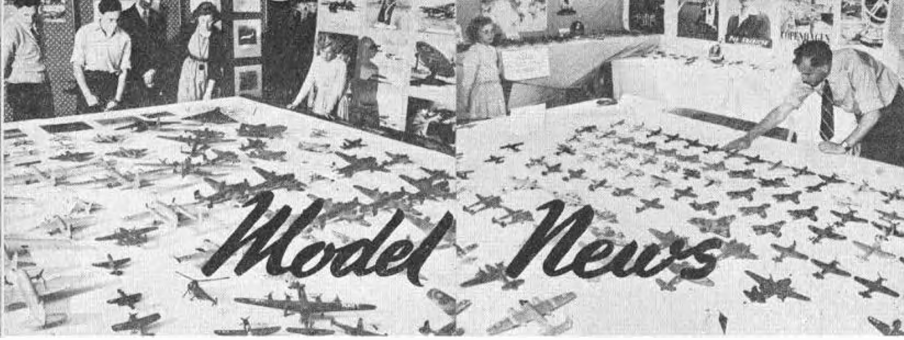
For data on the nacelle construction, reference to the feature on page 328 in the June, 1956, issue will be of some assistance. It is made by a formed sheet process, calling for a wooden forme which is circular in section and the exact size of the inside lines as opposite. This can be turned on a wood lathe, or carved by hand; the shape is not critical. Rings for the nose block are laminated, then mounted on the wooden forme after the tip has been removed; now shape to a point and wax the forme so that dope will not stick to it. Cover overall with doped tissue and cut 16 nacelle planks. These are an approximate curve, and are cemented in place around the forme, filling the small gaps with scrap as necessary. Cover again with tissue and dope after sanding smooth and applying further filling with sanding sealer. Put aside for 24 hours then mark off the various slots to take the struts, etc., and cut the eight holes. A twist will free the shell on the forme, and by cutting the division at N1 position the shell can be removed. Fit all internals to strengthen, as on the drawing. The nose cap ⅛ in. sheet webs are "egg-box" fitted and forced in place as they preserve the nose in any hard collision.

A tin, saucepan or similar drum is suitable for making the wing, diameter not being critical although the support struts have to be adjusted for any change. Cut ⅛ in. sheet to wrap around for the "undersurface" base and butt join with Sellotape. The strips should have the grain running from leading to trailing edge; cover with tissue and dope. Mark for the 36 rib spacings, and wind on the laminations for the L.E., T.E. and fit the spar which can be dampened to curve. Add ribs, fins, and extra support legs. The whole can now be removed and covered.

When assembled, the nacelle is not a fixture in the wing, but should be capable of sliding under pressure to take collision shock. Balance can be adjusted to bring the C.G. at 5 per cent. Chord, and experiment has shown that for V.T.O. the augmenter tube orifice should be less than 1 in. from the ground surface.

Fit a piece of d/t fuse on the igniter wick, light up and plug the nose cap mounted 50R on the nacelle—then stand back. The result is amazing ! ! ! For full rocket boost, cut the fuel as described in "Motor Mart", April issue, 1955.


NOSEBLOCK
① FORME FROM OBECHI WAXED
②TISSUE DOPED ONTO FORME
④FINAL COVERING OF DOPED-ON TISSUE
CUT
③ 1/32" SHEET PLANKING
2 3/8"
NACELLE CONSTRUCTION
N 1 1/8" SHEET
N 4 WIND FROM 5/16" X 1/32"
1/16" SHEET WEBS
N 5 1/16" SHEET
N2 & 3 WIND FROM 5/32" X 1/32"
NOSEBLOCK FROM 1/8" SHEET LAMNS
N1.
N4
N2
N3.
JETEX ROCKET MOTOR MOUNT
FIN
LE. 5 LAMNS. OF 1/4" X 1/32"
JETEX ROCKET MOTOR (50 R)
NACELLE PLANKS 16 OFF 1/32" SHEET
8 HOLES
NACELLE
1/16"SQ. SPAR
SLOTS FOR STRUTS
N5.
FINS 4 OFF 1/16" SHEET
STRUTS 4 OFF 1/16" SHEET
JETEX 50 AUGMENTOR TUBE
BTZ
TRADE MARK ON WING
PART RIBS EACH SIDE OF FINS 8 OFF 1/16" SHEET
1/64" SHEET INNER SURFACE
WIND T.E. FROM 1/32"X 1/4" LAMNS.
RIBS 36 OFF 1/32" SHEET
LEGS 8 OFF 1/16" SHEET

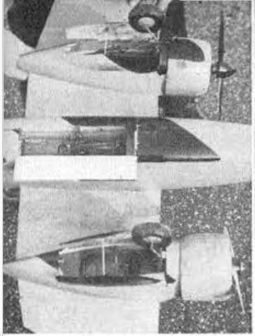


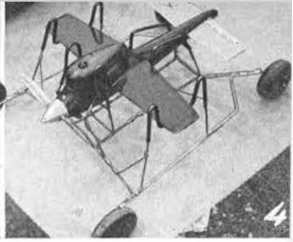
THIS MONTH'S COLLECTION of pictures must certainly establish a new record for the number of models to be seen in the space of two pages. Particularly if one takes the trouble to count the number of "solids" in the above pair of photos of Mr. Peter Farrar's "History of Aviation in Miniature", which has been mentioned before in AEROMODELLER columns. These views were taken at an exhibition of 540 examples of his handiwork on display at Torquay in aid of the S.S.A.F.A. Over 3,000 people visited the hall, resulting in a collection of £70 for the deserving charity. Show was opened by Air Vice-Marshall G. I. L. Save (O/C 19 Group, R.A.F. Plymouth) who was so impressed by this mammoth 1/72nd scale collection that he promised to help Mr. Farrar with data on older and more obscure subjects by searching through his personal photo album.

Free flight multi's are rare birds as we have said before, and pictures **1** and **2** show twin and triple engined pair that are the work of G. W. Dodwell of Mitcham. Single fin model has two E.D. "Bee"s fed by a single fuel tank in the wing centre section. Span is 5 ft. and all-up weight two pounds. This one is very sensitive to rudder trim and calls for pendulum operation or an increase in dihedral. Second model is really a "fake"—sorry! It has one E.D. Bee pusher and two free-wheeling props and, though underpowered at 22 ounces, it makes a very long and realistic take-off. Originally this had two Bees in the nacelles, but this combination was too powerful.

If we were to publish all the R6-B photographs received at the AEROMODELLER offices the issue would become mighty monotonous. Exception this month is to show a particularly neat example from the most northern club in the British Isles, that at Wick in Scotland. W. B. Bremner is holding the model in **3**, and he uses an Elfin 1·49 pusher diesel, Sommerhoff receiver and Mercury Cossor transmitter. Incidentally, this is about the best picture we have seen with an all grass background; reason being that it is wisely kept back out of focus.

Model of the Month—not through any pretence at fine finish or scale accuracy, but mainly because of its ingenuity. Type is a Miles Monitor target tug in correct black and yellow diagonal striping over the undersurface. It started life as a free-flighter with Mills ·75 power, but heavy weight changed





MODEL OF THE MONTH

builder Doug Marsh's mind and a pair of E.D. Racers were installed for control-line. Doug is secretary to the Bletchley model club, and a tenacious modeller, for as the lefthand view shows, the Monitor has a retractable undercarriage. When "down" and at rest, a wire trigger presses against the ground and on take-off this snaps forward to release a trip, and the u/c snaps "up" (as in right-hand picture). By third line and much elastic band tension in the fuselage the u/c can be triggered "down" again for the landing.

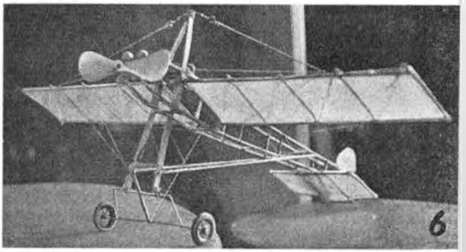
The World Speed Championships held in Italy September 28th-30th will be history as you read this: but photo **1** illustrates one of the likely winners in its maze of wires that form a take-off dolly. Model is the very fast SK 25-powered Sladky special from Czechoslovakia, winner in Paris last year, and a likely match for British, Spanish and Italian competition again this time.

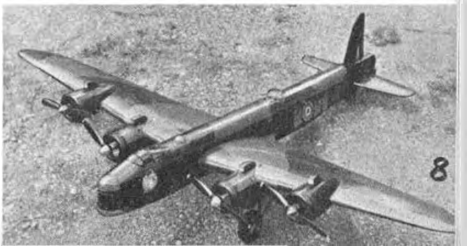
The A.P.S. plan for the Spitfire XIVe free-flight model is near the top of the popularity poll and judging by Donald George's effort in **5** from Liskeard we are not surprised. All transfer decoration was made by the gummed label process described in our October, 1955, issue, and the lettering is authentic for No. 155 Squadron. Cockpit is complete to the pilot's handlebar moustache!

A spot of history appears in **6** which was found by G. Bravey when looking through an old album. Model was made in 1908 by H. Taylor of Evesham, and wingspan said to be about 36 in. Unfortunately there is no record of its flying performance: but we like the turnbuckle devices to arrange tension on the bracing wires.

George Graham intended his glider in **7** for eventual radio control installation—it was automatically christened "Late night final" when Geoff stayed up until 3 a.m. one Sunday morning to complete it, only to be greeted by non-stop rain throughout the following day! Span is 8 ft. 4 in.

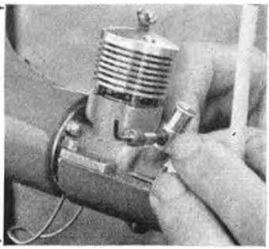
Last, but by no means the least, is **8**, another C/L multi, this time of the Short Stirling, and we think the first time this type has been tackled. Having E.D. 3·46s inboard, and 2·46s in outboard nacelles, it was made by Flt.-Lieut. J. Goodchild, C.O. of 1451 A.T.C. Squadron. Span is 58 in., weight 6¼ lb., and the total fuel capacity is 137 c.c. (Costly business—this multi flying!)





Know Your Engine

CONCLUDING PART 7, WHICH DEALS WITH MANUFACTURING FITS AND TOLERANCE REQUIREMENTS.



What's unusual about the Oliver Tiger Mk. III at right? The number of bolts through the mounting lugs should give a clue. Answer at foot of opposite page

Last month's feature dealt with the manufacturing requirements of a cylinder bore, the machining of crankshafts and possible faults arising from same, lubrication methods and the friction problem. We continue this "Know Your Engine" with more aspects on shaft bearings and piston fit.

Friction is generally lower when the shaft is mounted on ball bearings—*Fig.* 6—with the additional advantage that the frictional coefficient of a ball race is independent of speed. Thus ball races become an essential feature for the high speed racing type engines which may have to operate at speeds of up to 20,000 r.p.m. and peak at figures of from 15,000 to 18,000 r.p.m.

Ball races themselves are examples of precision engineering, but again produced on mass production lines. Hence they, too, are subject to normal tolerances. The outer ring of a ball race, for example, is never perfectly circular and is generally reliant on a true and substantial housing to minimise distortion (which is seldom available on an engine casting, particularly for the front bearing). For minimum friction, too, it is necessary with most single row ball races to ensure that the races are mounted truly at right angles to the shaft and with the right fit between shaft and ball race bore to prevent distortion of the inner ring. Further, ball races are a relatively expensive item so their use both adds to the cost (and weight) of the engine and introduces additional production difficulties. Usual practice is to press fit the races into housings machined to size in the crankcase casting (a taper of ·010 in. per inch being a common allowance on the casting for withdrawing the core), finishing the crankshaft to size by grinding, after hardening. Vertical alignment of the races (*i.e.*, normality to the shaft axis) is ensured by grinding the crank web (front) face and/or the step on the shaft in the case of engines with two diameters on the shaft. It is surprising that so far no manufacturer has employed self-aligning ball bearings on model engine production, which are available in single row bearings in suitable miniature sizes, although probably too expensive for any but the specialised engines.

Main limitations of ball race mounting of the shaft are the susceptibility of the front bearing to pick up dirt and grit and the general "porous" nature of the bearings as seals. The latter can be minimised by the use of suitable cover plates or seals. The Frog 2·49 B.B. utilises a synthetic rubber cover which both keeps out dirt and acts as a seal to prevent the escape of excess oil through the races (in the latter respect a pair of ball races is worse than a loosely-fitted plain bearing, unless steps are taken to trap the oil flow in some way. This can be done by incorporating a section of "plain bearing" length between the two races effectively as a capillary seal without actual metal-to-metal contact (and therefore minimum added friction)—*Fig.* 7—or with a fitted spacer which serves the same purpose, as in the Elfin 2·49 B.R.—*Fig.* 8.

With the piston cylinder fit the question of the seal between the two sliding surfaces is somewhat more important. This problem is aggravated by the nature of the loading—the piston exerting a definite side pressure on the cylinder walls and reversing the direction of this side loading during each complete cycle. Thus even with a perfectly circular piston and bore, were this a practical possibility, this would distort through a varying degree of ovability throughout each cycle, even though the actual change may be microscopic. Such changes may well, however, be within the "fit" limits recognised as necessary for optimum performance, particularly if the cylinder walls are thin. In other words, thin-walled cylinders can be a source of trouble, even distorting when screwed down by bolts through the head.

Contrary to popular opinion, an extremely close fit between piston and cylinder is not necessary for good performance. In fact, it is more probably true to say that the looser the fit the better provided the pumping action of the engine is not impaired and that an oil film is still maintained between the piston and cylinder walls. On a test conducted with a typical commercial 1·5 c.c. diesel, the piston fit was reduced to the order of ·0005 in. (as opposed to the more usual average of ·0002 in.) with the

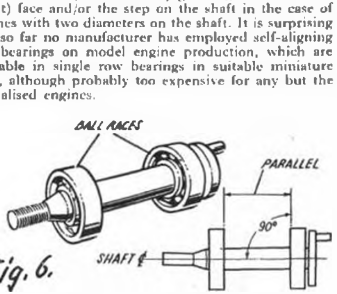
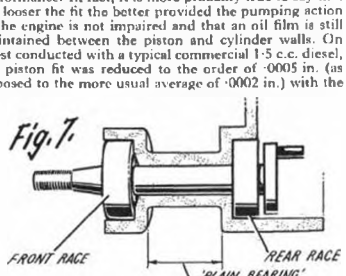


Fig. 6.

Fig. 7.

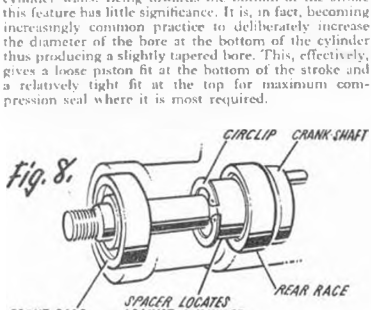


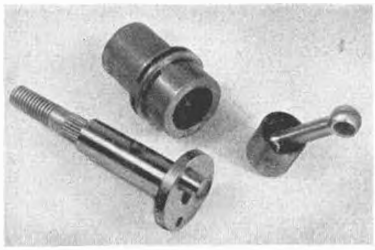
result that with the same propeller loads corresponding r.p.m. figures were increased by some 10 per cent. at the upper end of the speed range. This gain can be attributed entirely to reduced internal friction. Against this was the fact that the excessive compression leak at low speeds made the engine very difficult to start—requiring virtually a temporary seal of oil (which could be injected through the exhausts) to get the necessary compression and crankcase pumping for starting.

The ideal is obviously an intermediate fit. A piston loose enough to minimise friction at the operating speed required, and yet sufficiently closely fitted to preserve the necessary compression seal. Glow motors are far less stringent that diesels in this respect, requiring far lower compressions to start. Hence it is possible to get away with the lower pumping efficiency produced by a more generous piston-cylinder fit. Thus although the geometric compression ratio may be fairly high, glow motors commonly appear to lack compression when turned over by hand, a feature which cannot be tolerated to anything like the same extent on diesels, if they are to be easy to start. On the other hand, an apparent compression leak past the piston on a diesel when turned over cold is no indication at all of its potentialities.

The ideal would appear to be to increase the fit up to the point where good starting qualities are still retained, irrespective of how the engine "feels" when turned over cold. Yet customers are insistent in demanding good compression "feel" and so the manufacturer has generally to compromise between the two. As a general rule the closer the piston fit the longer the engine will have to be run in to bed down to a constant frictional value, but here we are up against a variety of both known and unknown factors. The known factors are the materials concerned and their fits and geometric accuracy. The largely unknown factors are the distortions which take place under speed and load.

With relatively few exceptions the cylinders on model engines are designed so that they can be bored right right through, then reamed. Normal production technique in this country where hardened cylinders are used, employs internal grinding which corrects any out-of-roundness which occurs when the bore is reamed, or any distortion following hardening. Final finishing is then done by honing (although this is not universal), or honing may be used in place of internal grinding. It is a characteristic of honing that the stone will tend to "dig in" at cut-outs, thus tending to form slight depressions in the region of ports formed in the cylinder walls. Being towards the bottom of the stroke this feature has little significance. It is, in fact, becoming increasingly common practice to deliberately increase the diameter of the bore at the bottom of the cylinder thus producing a slightly tapered bore. This, effectively, gives a loose piston fit at the bottom of the stroke and a relatively tight fit at the top for maximum compression seal where it is most required.





Key to much of the success of Dennis Allen's A.M. 10 diesel is the perfect mating fit of the piston in a heavy, distortion-free cylinder. Crankshaft is also burly for 1 c.c., giving excellent bearing surface in the crankcase

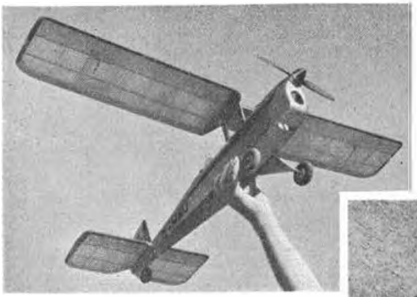
In the case of engines with a blind bore (*e.g.*, the original Ohlsson and Rice engines), the cylinder is made from special steel with an integral head and finished to size on the bore with a fine grinding machine. The cylinder was left soft and a hardened piston employed.

In this country the production method commonly adopted for pistons is to turn these ·010 to ·015 in. oversize and grind down to final size to limits of the order of plus or minus ·001 in. It is usual to make in addition batches of pistons ·0005 to ·001 in. oversize to allow for cases where the honing operator has been rather too generous in the amount of stock removed from the bore of a proportion of the batch of cylinders. American practice is then to grade finished pistons in sizes to within ·0001 in. for selective fitting. The more usual practice in this country is to hone the cylinder to fit a particular piston, often using a comparatively coarse hone. One or two manufacturers still persist in lapping pistons in to individual cylinders (*e.g.*, E.D. and J.H. Products). In general, a lapped piston will be much tighter in a finished engine and require a longer running-in time than one in which the piston has been ground to size and the cylinder bore honed to fit.

It will also be appreciated that any of the techniques described can result in appreciable differences in the actual bores (and thus displacement) of a batch of engines of the same nominal size. Usually the greatest differences are found in those engines whose bores are not ground after hardening and may vary as much as ·003 to ·005 in., depending on hardening techniques and accuracy of machining in the first place. In some cases the differences possible within the manufacturing tolerances accepted, and the production technique and jig limits, can be responsible for an engine of nominal "class" size being found slightly oversize on subsequent checking.

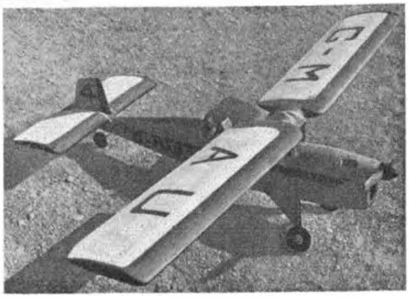
From the previous comments regarding centreless grinding, it will also be seen that a ground piston is not necessarily truly circular, although would indicate so with micrometer measurement (the jaws spanning the minute "hollows"). Pistons ground by other methods should be circular as finished (provided the grinding wheel is reasonably true). This is quite distinct from any deliberate "waisting" of a piston attempted to reduce the bearing area and so reduce friction.

Tiger opposite belongs to George French and is one of the radial mount variety: but the engine lugs are not wasted—they serve to support a crankcase wrapping tank, and prop-saving skid. Vent for the tank can be seen above lower finger tip.



Junior Jim

For .75 to 1.3 c.c engines



A TOUGH LITTLE 40 inch SPORT FLYER WITH A PARASOL WING MOUNTING FROM MAURIPUR, PAKISTAN

by J. Jacobson

IN MANY WAYS THIS PERT little parasol number is full of novelty. The wings are in two pieces, yet seat on a narrow centre section quite securely without need for strutting, the nose is capacious enough to take a wide variety of power units, and the tailplane is on the large side to cure any wayward looping tendencies. There is a little more to this latter point than meets the eye, for Junior started life as a Biplane!

Registration on the original stands for R.A.F. Station Mauripur, near Karachi in Pakistan, and is *not*, as the hawkeyes might want to correct, a mistaken use of the last civil registered Hurricane G-AMAU lettering. Colouring is black and white wings with a metallic purple fuselage.

This is one model that the sport flyer can really pour plenty of cement into without fear of coming out overweight. Twenty ounces is a mere nothing to Junior Jim, and most of the hard balsa fanatics who like to gusset every joint with a liberal wedge of clear cement will find it difficult to get beyond this figure, unless of course they resort to tar and canvas for covering!

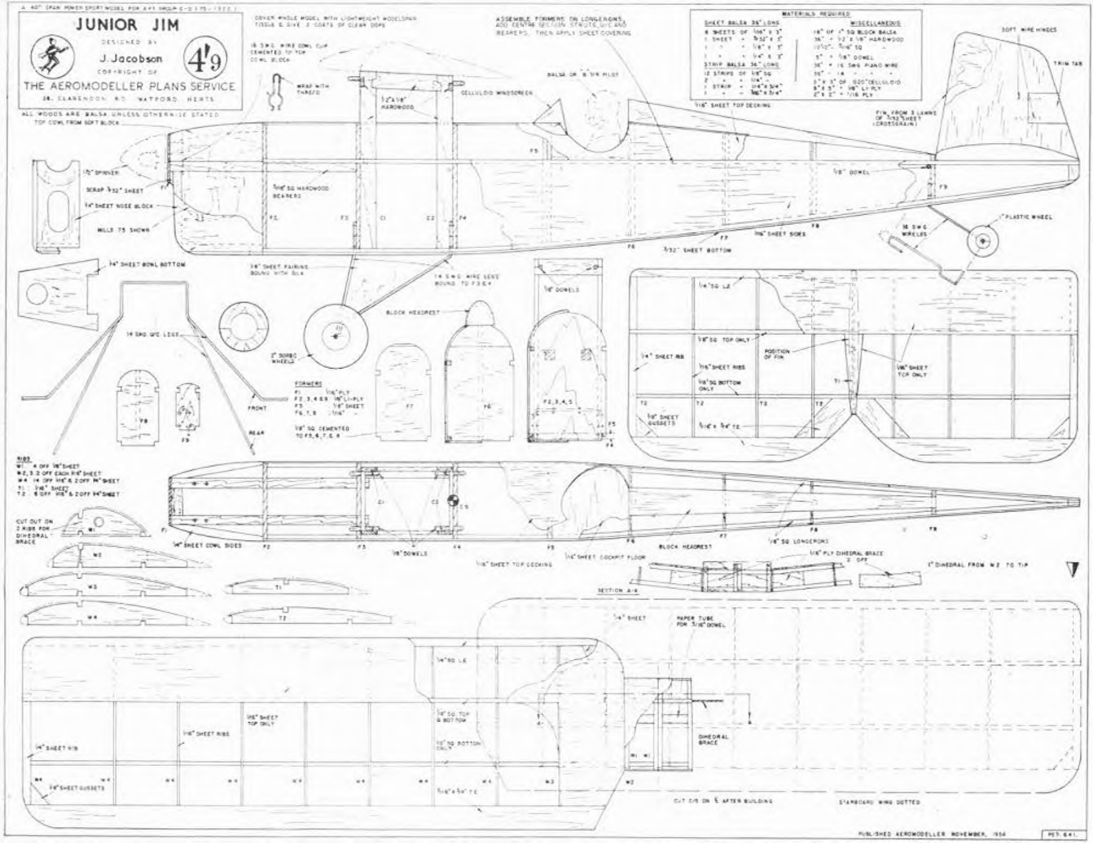
Ready to start? The fuselage can be made in either of two ways. "Jake" Jacobson recommends that the longerons are cemented to the 1/16 in. sides, then the formers added, while we feel that beginners in particular will find it more easy to assemble the formers on the longerons, then to sheet the sides. In both cases the undercarriage should first be bound to F3 and F4, and the tailwheel to F9, before assembly. When this basic fuselage is set, and bearers added to F2 and F3 the hardwood centre section struts can be fitted. Note that all the $\frac{1}{4}$ in. formers are cross-grained, *i.e.*, they are cut across the width of the balsa sheet and an $\frac{1}{8}$ in. square brace used to keep them firm. This system prevents the sides from sagging during eventual hard use of the flying field.

Add the cockpit "floor" and nose cowling parts, then fit the top and bottom sheeting, headrest, pilot and windshield. Complete the centre section strutting, making all joints as neat and strong as possible, then fit the wing and tailplane retaining dowels.

Apart from the centre section, the Jim's wings are a straightforward assembly of ribs upon lower spars, leading and trailing edges, then the upper spar and sheeting are added. Dihedral begins at the junction of the centre-section and mainplane as will be seen in the sectional front view. Build the complete C/section attached to the Port wing half by fitting the ply brace between spars at the root, then when the Port half is finished to the sheeting stage, cock it up at the tip with 1 in. packing and the centre will now be flat on the building board. Sheet the undersurface first, add the ribs with the paper tube fitted, then the top surface sheet. It is a good idea to extend the upper spar direct into the C/section for additional strength, and if this is done on both sides, then the Starboard panel has to be added before the top sheeting is completed. To do this, the Port half can be lifted up at an angle while the rest of the wing is made flat on the board. Last stage is to cut very carefully right through exact centre of the flat panel and this is best done with a small "Eclipse" hacksaw. Dowel in the two tubes will hold the halves together (if a two-piece wing is at all desired) and the firm seating in the fuselage platform will keep all square if the retaining rubber bands are arranged diagonally.

Tail unit is similar in construction: but if a biplane modification is desired, the tailplane should be extended by two rib bays on each side. Wings can be duplicated, the lower set fitting between F3 and F5 which conveniently line up with the leading and tailing edges.

All that remains is to cover with lightweight tissue, give two coats of clear dope and colour according to your whim.



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ALL BRITAIN RALLY—RADLETT

John Public, his wife and family went along 14,000 strong to see members of 162 clubs and countless unattached flyers run the gauntlet at Sir Frederick Handley Page's Radlett airfield. Use of fencing served to keep the crowds at bay for all events but radio was, as ever, a disjointed affair, brightened only by a display of "how to do it", using a diminutive 3½lb .75 by Capt. Capt. E. E. Carroll of U.S.A.F. We feel the lads would have performed far better had there been some crowd control.

1. Ted Hemsley's multi-channel winner approaches over the crowd for its fine spot landing. 2. Twice size APS Chrislea by A. Grannier of Northwich Park, has a 6-reed outfit, weighs 11 lbs. and may use ailerons. Engine is a 10 c.c. Hornet. 3. George Wallis entered the d'Elegance with a near scale pusher Warren-Young—is it tailless? 4. Test Pilot Haseldon (Handley Pages), Cunningham and Bugge (De H.'s) give a thorough check to F/O Norman's winning Acro Tutor 5. Capt. Carroll from U.S.A.F. winds the actuator drive for his Mills powered single channel winner. 6. Among new shapes in air was the Fireball by F. Sturgess of Caterham, with A.M. 35, E.C.C. etc, very fast. 7. Epsom's M. Bumble tried the ballast dodge for R.O.W., as did Dave Penner. Neither were successful 8. F f Walrus with an Amco. .87 by H. Wright of Kingswood based on A.P.S. scale drgs. 9. Vic Jays won R.O.W. point once more. Here tuning the E.D. in hand launch model. 10. By winning two events, 2nd in another, Hayes' Josh Marshall deserved the Championship Cup.

RESULTS

Open Rubber Duration (40)		
1. J. O'Donnell	English Electric	9:00 & 5:08
Open Glider Duration (93)		
1. P. Manville	Bournemouth	8:00
Open Power Duration (75)		
1. D. Posner	N.W. Middx.	8:21
Open Tetex Duration (7)		
1. J. O'Donnell	English Electric	2:15
Seaplane Rubber Duration (3)		
1. R. Lennox	Birmingham	6:51
Seaplane Power Duration (9)		
1. V. Java	C.M.	6:00
Tailless Rubber Duration (10)		
1. I. Marshall	Hayes	7:32
Tailless Glider Duration (10)		
1. R. Way	Southern Cross	4:40
Tailless Power Duration (5)		
1. O. F. W. Fisher	R.A.F Yateshury	1-46
Team Race "A" (53)		
1. V. Rhodes	Foresters	8:27
Team Race "B" (21)		
1. D. Walker	Enfield	
Combat (58)		
1. W. Wood	Derby	
Concours d'Elegance—Scale (11)		
1. F/O F. Surman	R.A.F. Abingdon	
Concours d'Elegance—Non-Scale (9)		
1. T. Evans	Northampton	
Clipper Carco (9)		
1. J. Marshall	Hayes	12 oz. & pilot
Radio Control—Rudder only (43)		
1. Capt. E. E. Carroll	U.S.A.F.	
Radio Control Stunt—Multi Channel		
1. F. Hemsley	Bushey Park	

( ) Numbers indicate entries

and other meetings

In the United Kingdom Challenge Match, G. Telford of the Irish power team releases in the high wind. Apparently the winds did not abate for the Irish Nats. either, as centre pic. shows Norman Osborne doing a spot of unintentional blind flying during open rubber—he finished 3rd. At extreme right, Tony Morelli was power winner in the Irish Nats., releasing Oliver model

THE 16TH IRISH Nationals opened on sunny but windy September 1st at Baldonell and a sure sign that glider wing construction has improved, was indicated by the number of snapping towlines. Conditions were such that those who were unlucky with lift, were hard pressed to beat one minute. Sunday the 2nd was overcast, calm and pouring with rain, which apparently discouraged many entrants from putting in an appearance. Young Vincent Corwell, flying in his first contest, demonstrated convincingly his ability to handle a Wakefield by finishing second to brother Niall and just beating Norman Osborne, making a welcome return to the fray with one of his old faithfuls. In power, Jimmie Carroll was unlucky not to be able to locate his Amazon type model after a first round maximum, and Tony Morelli unnerved everyone except himself at each launch. He made a double max: and 2:11 so there was no doubt as to the outcome.

GLIDER		sec.	RUBBER		sec.
1. T. Morelli	D.A.M.	423	1. N. Corwell	P.A.C.	317
2. J. Carroll	Shankill	348	2. V. Corwell	P.A.C.	311
3. N. Corwell	P.A.C.	281	3. N. Osborne	D.M.F.C.	305

POWER		sec.
1. T. Morelli	D.A.M.	491
2. S. Elder	D.A.M.	359
3. P. Hayes	Sandyford	325

Held at Troome, N. Ireland, at the same time as the above Nationals, was the 1956 United Kingdom Challenge match, to which teams had been sent from England, Ireland and Scotland. It was a blustery day for them, and times suffered somewhat, but this proved no handicap for the English contingent, as seen in the results at right.

At the S. Midland Gala, Mac Grimmond had a post little Class "A" racer that muffed its chances of a win when the mech. let the fuel bottle roll into the prop. has new item in trim. At right, Dave Platt and Class "B" winner, finished in purple around wing, and using a McCoy 29

U.K. CHALLENGE MATCH RESULTS

Team Aggregates

	Rubber	*Glider*	*Power*
England	27:32	21:51	19:02
N. Ireland	20:57	12:43	12:39
Scotland	3:00	10:30	10:06

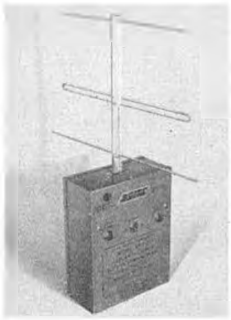
Individual Winners

Power.—F. M. McNulty (Northern Area, England) 7:28
Rubber.—J. K. Cartwright (Northern Area, England) 5:16
Glider.—R. C. Amor (London Area, England) 7:18

Capt. Foxx, keen modeller of a U.S. Target Section brought one of his 228 m.p.h. playthings along to interest the boys at Radlett. Flies for up to 90 minutes, is 138 in. span, comes down by 38 ft. dia. parachute. Also at Radlett was Miss Valerie Moore, seen holding P. Lambert's scale Victor glider—nicely finished in silvery blue

RADIO CONTROL NOTES

CONDUCTED BY THE EDITOR



Babcock 465 megacycle Equipment

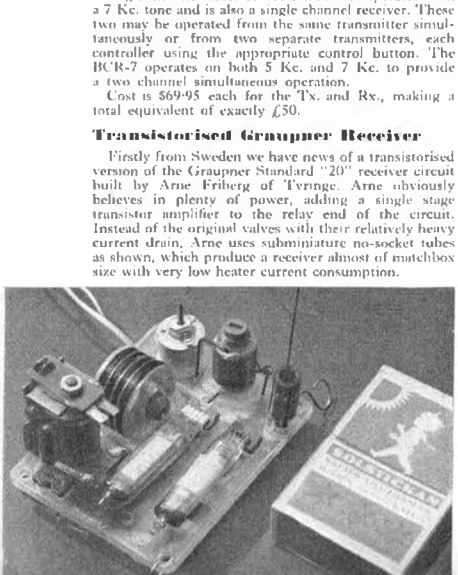
We have received a technical description from Messrs. Babcock Models of their new 465 megacycle transistorised equipment mentioned last month. The equipment operates on the tone modulated carrier principle. The transmitter includes two tone oscillators, each operated by a separate button and may be used simultaneously. The receiver employs direct detection with a crystal diode at the base of the antenna, the receiver itself being a high gain audio amplifier using transistors for audio amplification and relay control. (*See photos above*).

Receivers are available in three different types. The BCR-8A operates with a 5 Kc. transmitter tone and is a single channel receiver. The BCR-8B operates with a 7 Kc. tone and is also a single channel receiver. These two may be operated from the same transmitter simultaneously or from two separate transmitters, each controller using the appropriate control button. The BCR-7 operates on both 5 Kc. and 7 Kc. to provide a two channel simultaneous operation.

Cost is $69·95 each for the Tx. and Rx., making a total equivalent of exactly £50.

Transistorised Graupner Receiver

Firstly from Sweden we have news of a transistorised version of the Graupner Standard "20" receiver circuit built by Arne Friberg of Tyringe. Arne obviously believes in plenty of power, adding a single stage transistor amplifier to the relay end of the circuit. Instead of the original valves with their relatively heavy current drain, Arne uses subminiature no-socket tubes as shown, which produce a receiver almost of matchbox size with very low heater current consumption.



Base material is something different, a transparent German made product that looks similar to Perspex. It has very high insulation properties that vary from 2 to 5 millimetres in thickness and can easily be cut with a fretsaw. It can be made more translucent by rubbing the surface with benzene (not ether!) which is also its solvent.

All that is necessary to fix a tag or screw is to heat same with soldering iron and press into the Trolitul which softens under heat, setting hard again as it cools. On a sample panel we examined the tags and fixings were absolutely rigid. Trolitul is available in Germany at double the price of Paxolin.

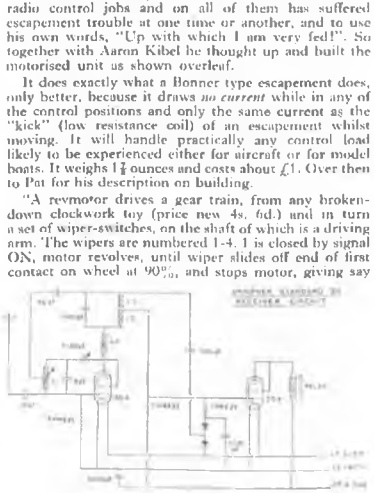
To return to Arne Friberg's receiver—we gather it weighs 2·8 ounces including a Graupner/Egelkraut relay and the valves used are V1 : XFY-10 or DL 67; V2 : DL 68. Both are subminiatures with total heater drain of 50 milliamps. Transistor is Type OC 604 and the "on-signal" current triggered in the collector end of the transistor is 6 milliamps or more with an idling current of 1 milliamp. It is important that the total resistance in the final stage should be 6,000 ohms which will mean adding a fixed resistor in the case of the majority of relays likely to be used. H/T supply is 30 volts and Arne points out that the heater circuit could be further reduced to 20 milliamps by using subminiature DL 651 valves. *See photo below.*

South African Motorised Actuator

Pat Wheeler of Cape Town has built and flown five radio control jobs and on all of them has suffered escapement trouble at one time or another, and to use his own words, "Up with which I am very fed!". So together with Aaron Kibel he thought up and built the motorised unit as shown overleaf.

It does exactly what a Bonner type escapement does, only better, because it draws *no current* while in any of the control positions and only the same current as the "kick" (low resistance coil) of an escapement whilst moving. It will handle practically any control load likely to be experienced either for aircraft or for model boats. It weighs 1¾ ounces and costs about £1. Over then to Pat for his description on building.

"A revmotor drives a gear train, from any broken-down clockwork toy (price new 4s. 6d.) and in turn a set of wiper-switches, on the shaft of which is a driving arm. The wipers are numbered 1-4. 1 is closed by signal ON, motor revolves, until wiper slides off end of first contact on wheel at 90°/₀, and stops motor, giving say



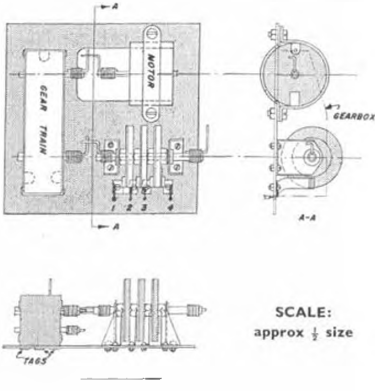
Replica of Graupner "Standard" single channel receiver, with single stage transistor amplification.—Built by Arne Friberg of Tyringe, Sweden, after AEROMODELLER wiring diagram above. Note subminiature valves and single OC 604 transistor, next to receiver relay

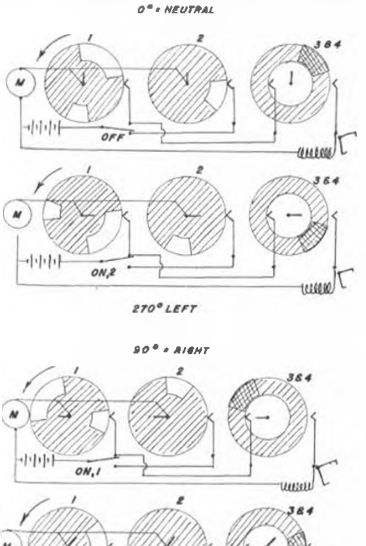
RIGHT turn. As long as signal is held on, no current drawn; let go the button, opposite pole of relay direction and wiper 2 takes over to drive motor in same direction, round to 0° again, UNLESS you hit the button again and hold, when 1 takes over from 2 and stops motor at 27%. Let go again and immediately hit the button, motor starts just and then stops and contacts 3 and 4 complete circuit to auxiliary escapement (motor control). Let go again and she goes back to neutral (0°). So: 2 blip and hold=RIGHT, 2=LEFT, 3=MOTOR à la Bonner.

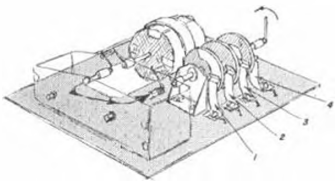
"On 4½ v. motor draws 650 milliamps, on 6 v., 800 m. Gear ratio I'm using is 64 : 1, but anything between 50 and 80 odd will do. The lower the ratio the faster the action and higher the current. At 64 : 1 on 6 v. complete rotation=1 second. There's only one snag, you must not hit the button *too* fast, not more than 3 times a second. With a Microswitch this is quite easily done.

"Why are the ends of the contacts on the wheels about 10° out of line? — To allow for overrun, *i.e.*, the time it takes for the motor to stop after current is switched off. Note also that neutral on 1 and 2 overlap a little as, if you stop the electric motor at about 340° to get engine control, the electric motor doesn't get up enough steam to overrun more than a degree or so; thus, the overlap makes sure you can get 'right' again.

"Contact 3 is a ring facing same way as 1 and 2, 4 is a segment on other side of 3 and attached to it."







Construction

Base: ⅛ in. Paxolin. Hole cut for motor and linkage. Drill and cut slots to take gear tram tags.

Rewmotor: Strapped on, off-centre, with 18 s.w.g. aluminium and 6 BA bolts and nuts. Cut down shaft length to suit.

Wiper Wheels: ⅛ in. Perpex ⅞ in. diameter (according to distance of "spring" axle of gear train from base), with contacts of tin plate held on by tags bent over edge. Contacts 3 and 4 all one piece or two pieces soldered together.

Wheel supports: Tin plate and washers soldered on as bearings.

Axle: 6 BA x 1¼ Brass screw or screwed rod.

Linkage: 22-24 s.w.g. music wire, bound and soldered.

Wipers: 10-thou. brass shim: attach with 10-12 BA bolts. Prevent from turning by soldering connecting wires up through from holes alongside each.

That relay—a reader's letter

"We feel that we must mediate in the dispute that has arisen between Messrs. Boys and Ripmax over the A.30 relay.

"In fairness to Messrs. Ripmax it must be admitted that Mr. Boys' comments were somewhat cursory and he made no mention of the fact that the relay is a nicely-finished article, and more important, is the cheapest on the market. However, we must not lose sight of the fact that the A.30 is an unbalanced relay, and in our experience there are many instances where vibration prohibits the use of such a component.

"It is unfortunate that Max Coote does not fully appreciate the principle involved in the Howard Boys system (incidentally, also used by the winners of this year's single channel power and glider international contests). The essence of the system is that the ratio of the time-of-dwell of the relay contacts should at all times be proportional to the control demand. If this result is to be achieved at a switching frequency greater than about 1 cycle per second then a very high speed relay must be used. This can be appreciated when it is realised that if the ratio of the times-of-dwell is to be varied from 10 : 1 to 1 : 10 then the relay must be capable of accurately following a square wave input of ten times the switching frequency.

"Now the contact transit time of a standard high-speed relay is likely to be of the order of 5 milliseconds (*Proc. I.E.E.*, March, 1953, page 47) and a simple sum will show that at 50 cycles per second the moving contact of the relay spends half its time in transit. Even presupposing an otherwise perfect relay this could not be called faithful reproduction and very little chatter is required to make the variable mark-space ratio control system break down completely.

"It can be seen from the foregoing that the requirements for a relay to be used in the Howard Boys system are stringent and we are not surprised that he has had trouble with unbalanced types, but this should not obscure the fact that there are many, many uses for which the A.30 would be ideal, and, at the price quoted, we are sure it will be much used by modellers.

"In conclusion we would point out that all criticism is useful and can lead to the development of better products.

"Yours faithfully

D. W. ALLEN and H. CUCKSON.

Before the dust has settled from the above argument let us sum up. It would seem that the A.30 Relay, whilst quite suitable for receivers operating with standing current of 3 milliamps and above is not suitable for equipment operating at smaller current figures. It is, nevertheless, a very well made relay, and used in the *proper* circuits will do an excellent job.

Colour Coding

In our last issue contributor E. R. Hill, designer of the popular two-valve receiver, gave a few follow-up notes for the benefit of those constructors who were unable to obtain satisfactory working. We would point out at this juncture that these people are in the minority, as each day our editorial postbag contains at least one letter from readers delighted with the successful working of this excellent receiver.

One item not specified by Mr. Hill, which can prevent correct operation of the receiver, is the use of incorrect value components, particularly capacitors and resistors. He has therefore drawn up the following table of colour coding which we suggest home receiver constructors cut out and put on the wall of their workshops.

COLOUR	'A' 1ST FIGURE	'B' 2ND FIGURE	'C' MULTIPLIER	'D' TOLERANCE †
SILVER	–	–	·01	10 %
GOLD	–	–	·1	5 %
BLACK	–	0	1	–
BROWN	1	1	10	1 %
RED	2	2	100	2 %
ORANGE	3	3	1,000	–
YELLOW	4	4	10,000	–
GREEN	5	5	100,000	–
BLUE	6	6	1000,000	–
VIOLET	7	7	–	–
GREY	8	8	–	–
WHITE	9	9	–	–
NONE	–	–	–	20 %

CERAMIC CAPACITORS

COLOUR	'A' 2ND COLOUR TEMPERATURE COEFFICIENT	'B' 1ST SIGNIF FIGURE	'C' 2ND SIGNIF FIGURE	'D' MULTIPLIER	'E' TOLERANCE 10 PF OR LESS	'E' TOLERANCE MORE THAN 10 PF
BLACK	NP0	0	0	1	2·0 PF	20 %
BROWN	N030	1	1	10	0·1 PF	1 %
RED	N080	2	2	100	–	2 %
ORANGE	N150	3	3	1000	–	2·5 %
YELLOW	N220	4	4	10000	–	–
GREEN	N330	5	5	–	0·5 PF	5 %
BLUE	N470	6	6	–	–	–
VIOLET	N750	7	7	–	–	–
GREY	P030	8	8	0·01	0·25 PF	–
WHITE	P100	9	9	0·1	1·0 PF	10 %

Examples

47 ohm 10% resistor:

A = Yellow	4
B = Violet	7
C = Black	×1
D = Silver	±10%

33,000 ohms 20%:

A = Orange	3
B = Orange	3
C = Orange	×1000
D = Not present	

NOTE.—In the case of a Type B resistor the whole of the resistor would be orange.

51 pF 10%:

A = appropriate temperature coefficient colour	
B = Green	5
C = Brown	1
D = Black	×1
E = White	±10%

6 pF ± ·5%:

A = appropriate temperature coefficient colour	
B = Blue	6
C = Black	0
D = White	×·1
E = Green	±·5%

R.A.F. GEN

Bruce Fergusson explains the origin of the R.A.F. March-past music

THE R.A.F. CENTRAL BAND was formed in 1920 under the Direction of Flight-Lieutenant J. H. Amers, who was the first Director of Music of the Royal Air Force, because, as in the other two Services, music plays an important part.

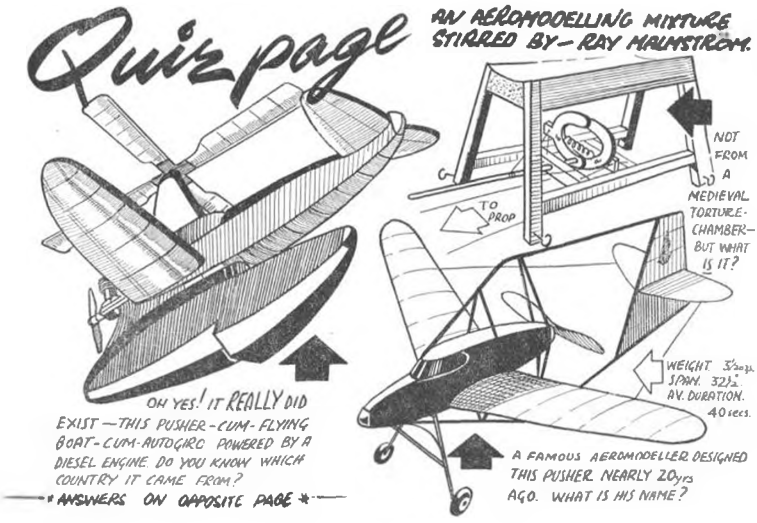
Sir Walford Davies, sometime organising Director of Music of the R.A.F., composed the first part of the familiar R.A.F. March-past, whilst his successor, Sir George Dyson, composed the part called the "trio" which afterwards Flight-Lieutenant J. H. Amers arranged to form the official March-past of the Service.

On ceremonial occasions at the R.A.F. College, Cranwell, cadets had been accustomed to passing-out to the march of the "Lincolnshire Poacher". For many years before the last war this had become a tradition and, in spite of the fact that when in 1932 Warrant Officer (now Wing Commander and Director of Music) A. E. Sims wrote a special march-past, the "Lincolnshire Poacher" was still the favourite. Now this March-past was the Regimental March of the Royal Lincolnshire Regiment. After the war and when the College was re-opened, a move was made to reinstate the march, but in order to place things on a proper footing the Commandant, Air Commodore G. Beamish, approached the Colonel of the Royal Lincolnshire Regiment, Major-General J. A. A. Griffin, and asked his permission, which was readily given.

Wing Commander A. E. Sims was responsible for composing the music for the March-past of the Royal Air Force Association.

"For those in the Air" is a lovely but little-known hymn which has, alas, never been recorded although it has been broadcast. The composer's name has long since been forgotten, but someone called Kermode wrote the words. It is to be hoped that this hymn will be revived and become the Anthem of the Service, particularly now that St. Clement Danes is to be the R.A.F. Church.

Next month we shall consider odd associations of the Battle of Britain!



Trade Notes

Westland Lysander from Keil-Kraft's 18-in. span 3s. 9d. Junior Flying Series makes into a fine model—in experienced hands

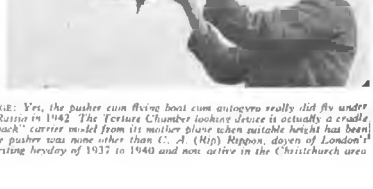
TRADERS HAVE BEEN slow to react upon the Hangar Door comment last month when we remarked on service in the model shops. The one irate proprietor sent along a well-known manufacturer/distributor's invoice copy to show how things are far from "return delivery", with a 16-day delay on items said to be available ex-stock and we are looking into this. It seems that one or two of the wholesalers need a spot of streamlining in the despatch works.

Small but none the less attractive items are the main feature of this month's introductions, and we started off by testing the new plastic kit accessory lines. **20-minute Enamel** is to be the trade name for a new line in specially-developed decorating colour for any of the plastics by **P. Smith** of Croydon. Sold in convenient jars with screw tops at 8d. each in a range of 12 colours, this stuff really does live up to its name and leaves a smooth, dust free surface without those wrinkles caused by chemical action of common dopes, etc., on plastic. Colours include camouflage tones as well. For adhesives to suit the plastic one must employ Polystyrene, and latest addition to the range of special cements is the mauve-coloured **H.M.G.** pack from Manchester.

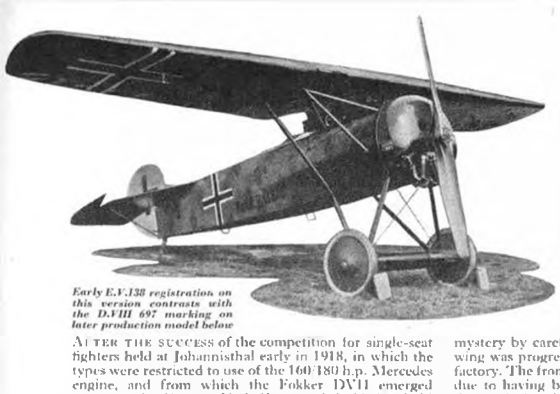
Dethermaliser fuse in a bundle of three yards can now be purchased for a mere 9d. through distributors **Contest Kits.**

Keilkraft's Lysander in the 3s. 9d. range was a pleasure to make, and passed full flying tests with all honours at the Clarendon Road testing grounds. Many tend to pooh-pooh these three-and-nines as "unsuitable for the beginner—too small for the experienced". On the first point we agree, the second deserves ridicule for as the photo above shows, it makes a fine flying scale model for a minimum of expenditure. Another small-scaler that deserves special mention is the **Cessna Bird Dog** at 5s. 11d. by **A. A. Hales** which is likely to set a new standard in small kit presentation. This is one of three types out this month, others are a fine Auster Autocar, and Puss Moth. Each is all-sheet and accurately die-stamped with colour decoration, ready to pop out of specially graded lightweight (6-8 lb. per cube) balsa. A plastic prop and stage-by-stage plan with copious detailed sketches go to make this series outstanding from many points of view, and from the beginner angle they should be one of the most satisfying lines on the market. Also from A. A. Hales this month is the new **Transfer** line in two scales, at 8d. and 6d. each sheet, for solids or flying models in British, U.S.A., German and Soviet (including Poland) markings.

Left, the Yeoman transfer sets, available in two scales for popular model sizes. Dethermaliser fuse bundle at 3d. per yard is cheaper than same lampwick at ironmongers, supplied by Contest Kits. Director of which, Mick King, is seen at right testing latest "Calypso" kit with AM 10 diesel. Left are the new special P. Smith 20-minute Enamel and HMG special cement developed for plastic kits.



ANSWERS to QUIZPAGE: *Yes, the pusher cum flying boat cum autogyro really did fly under power and was built in Russia in 1942. The Torture Chamber looking device is actually a cradle for releasing a "pick-a-back" carrier model from its mother plane when suitable height has been attained. Designer of the pusher was none other than C. A. (Bip) Rippon, doyen of London's aeromodellers in that exciting heyday of 1937 to 1940 and now active in the Christchurch area.*



Early E.V.138 registration on this version contrasts with the D.VIII 697 marking on later production model below

AIRCRAFT DESCRIBED

Number 81

Fokker D.VIII

by P. L. Gray

AFTER THE SUCCESS of the competition for single-seat fighters held at Johannisthal early in 1918, in which the types were restricted to use of the 160/180 h.p. Mercedes engine, and from which the Fokker DVII emerged supreme, the German High Command decided to hold another and manufacturers were duly circularised. ". . . another competition will be held during the month of April in which there will be no limitation in size of aeroplane, engine or power; to be governed by the same competition rule in the choice of aircraft as governed the earlier competition this year."

Fokker had on hand an experimental parasol monoplane, the V26, powered by a 140 h.p. Oberursal rotary engine, which he thought, after modification, would fill the bill. The main alterations were the introduction of taper into the trailing edge of the wing with the ailerons inset; the original comma-shaped rudder was enlarged and a triangular fin added; balanced elevators were introduced and there were also alterations to the centre-section and under-carriage struts. The resulting aeroplane was at first designated E (for eindecker—monoplane) V, but this was amended, on official adoption, to DVIII.

Most manufacturers entered aircraft in the competition: Albatros, Dornier, Kondor, LVG, Pfalz, Roland, Rumpler, Siemens-Schuckert, etc., and these were flown by pilots from the Front Line fighter squadrons (Jagd-staffeln) on whose votes the final choice rested. Gradually the various types were eliminated, but the cantilever Dornier DI and stocky S-Schuckert were still in the running, eventually, however, the pilots were unanimous in their selection of the Fokker cantilever parasol which combined a rapid take-off and climb, speedy diving ability and considerable agility in combat manoeuvres.

In May the DVIII was flown to Adlershof for official loading tests before it could be accepted for mass production. Anthony Fokker states in his auto'nography "Flying Dutchman" : "The wings proved sufficiently strong, but the regulations called for a proportionate strength in the rear spar compared with the front spar. These regulations were for the ordinary braced-wing type. Since no regulations existed for cantilever wings, these rules stood for all . . . we strengthened the rear spar and started to produce in quantity and the first six planes were rushed to the front." Within a very short time three of these DVIIIs crashed due to wing failure and the remaining three were grounded. An investigation was immediately started but proved fruitless and production was held up pending a solution; about 50 or 60 aircraft being complete and *en route* to the Front.

When the Army admitted it was unable to explain the collapse of the wing in the air, Fokker took it upon himself to solve the mystery by carefully measuring the deflection as a new wing was progressively loaded with sandbags at his own factory. The front spar flexed normally, but the rear spar, due to having been strengthened, remained rigid, with the result that the angle of incidence increased greatly at the tips. Thus, in flight, the wing tips were carrying a greater load than the centre, the resultant torsion causing the wing to fracture in combat manoeuvres.

Eventually production resumed in the autumn with wings built to the original standards, which proved to be amply strong and trouble-free. By this time, however, the war was drawing to a close and there was no chance for the DVIII to prove itself in combat.

Rudolph Stark, C.O. of Staffel 35, makes several references to the DVIII in his book "Wings of War". On July 17, 1918: "Several of the neighbouring Staffels were better off (presumably Jastas 23, 32 or 34, which together with 35 were component units of Jagdgeschwader (*i.e.*, Wing) IV) flying their quick-climbing triplanes or the new Fokker DVIII," etc.

Construction

The fuselage was an internally braced, welded steel tube structure, similar to that of its forebears the DrI and DVII, the tubes being progressively reduced in gauge and diameter from 22 mm. diameter at the nose to 18 mm. diameter at the tail. It was basically a braced box girder with a rounded decking added on top. From the circular fire-wall a single light wooden member extended on each side in the plane of the thrust-line, backwards as far as the cockpit; over this the fabric was stretched, thereby making some attempt to graduate the circular nose contour into the slab-sided rear fuselage. The internal bracing was of piano wire looped from corner to corner by passing round small, tubular quadruts welded into the frame at the intersection of the longerons and spacers, and the loop joined with a single turnbuckle, thereby achieving virtual double bracing.

The wing was a cantilever, wooden structure with two deep, tapering box spars. The top and bottom member

of each spar was of spruce, joined at the side with webs of birch three-ply, with fabric glued over the joints; the ribs were of three-ply with spruce flanges and the whole of the internal structure was given a coat of varnish.

The undercarriage and centre-section struts were of streamlined steel tube, and some photographs show the tops of the undercarriage Vees to be connected with a light tubular structural member, which was unique. A split stub, to take the axle and allow for travel, was welded to the apices of the Vees, and over this the coil spring shock absorbers were wrapped. The whole axle assembly was then covered with a lifting surface, the construction of which was very similar to the wing. The wooden tail-skid was steel shod and hinged just forward of the rudder post.

With the exception of the circular metal engine cowling the entire airframe was fabric covered.

Colour Detail

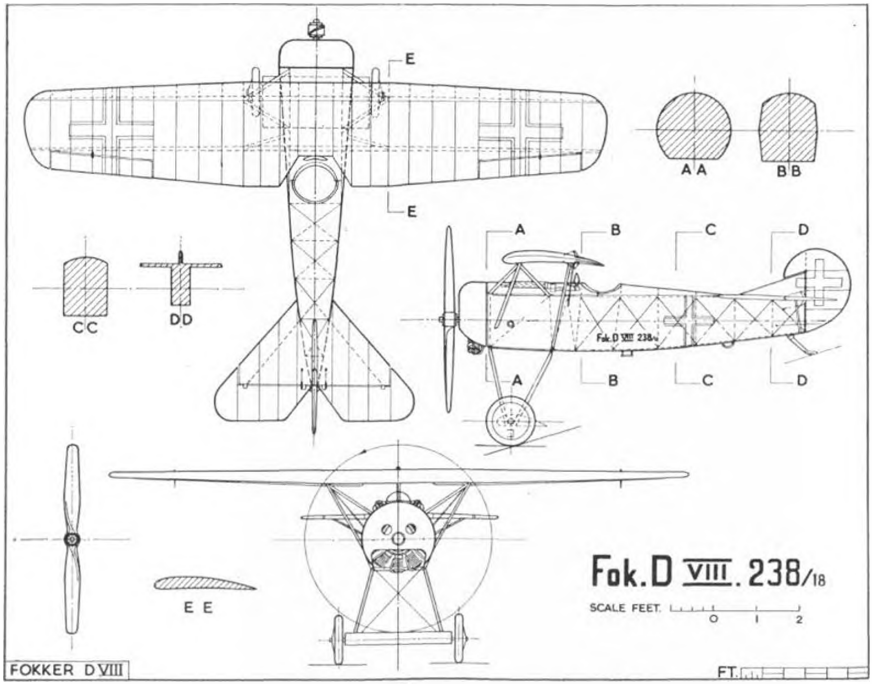
The fabric covering was of the then standard printed lozenge pattern, in shades of dark and light green, mauve and ochre, with sometimes the substitution of pink for mauve on the fabric used on the under-surfaces. The rudder was usually covered with plain white fabric upon which a plain black Latin cross was painted. The crosses on and under the wings were of full chord, with, usually, narrow white outlines to the sides only. The crosses on the fuselage matched those on the wing, extended the full depth between the longerons and were positioned slightly forward of the tailplane.

Serial numbers were stencilled in black low down on the fuselage, below and slightly aft of the cockpit, usually in a narrow, plain block style and including the abbreviated designation of the aircraft, *i.e.*, Fok DVIII 697/18. Other known serials were: 692/18 a modified aircraft with a bulged cowling, 238/18 flown by Ernst Udet, 553/18.

Data

Engine: 140 h.p. Oberursal nine cylinder rotary.
Span: 8·34 m. (27 ft. 4⅜ in.). Length: 5·865 m. (19 ft. 4⅜ in.). Height: 2·82 m. (9 ft. 2⅜ in.). Weight Loaded: 605 kg. (1,334 lb.). Weight Empty: 405 kg. (893 lb.).

Speed at sea level: 200 k.p.h. (124·29 m.p.h.).
Climb: 1,000 m. (3,281 ft.) in 2 min. 2,000 m. (6,562 ft.) in 4½ min. 3,000 m. (9,843 ft.) in 7½ min. 4,000 m. (13,124 ft.) in 10⅞ min.



"J" TYPE 1/72ND SCALE REPRINTS OF THIS DRAWING AND "A" TYPE 1/48TH SCALE TYPE DIE-LINE PRINTS ARE AVAILABLE PRICE 6d. AND 1/- RESPECTIVELY FROM THE AEROMODELLER PLANS SERVICE. QUOTE DRAWING NO 2667 WHEN PLACING YOUR ORDER.

Carnival float by the Rye Modellers' Club was a shit on the ever present noise problem and public appreciation of control line flying. See their club report

MODEL POLITICS is tearing its ugly head again in a certain Area, surprisingly enough this time not because of what *has not* been done, but because someone has got his finger out and produced rules recommendations for Combat and ½-A Team Racing, these now being out with the Areas for consideration and confirmation.

H.J.S., Technical Secretary of the S.M.A.E., had the "temerity" to co-opt his own sub-committee and got the job done in very short order in an effort to satisfy the increasing demand for some guidance from H.Q. on these categories of flying. As a result, the members of a sub-committee appointed two years ago—and not *reappointed since*—have got hot under the collar and are "stirring it up" for all they are worth, unfortunately aided and abetted by people who should know better.

Our advice to these D.F.s is to wrap up and constructively criticise the recommendations submitted today, and to further reflect on the fact that they could have done precisely what the Nicholls Committee has done, instead of sitting on their fannies and producing exactly nothing!

A further matter discussed that may appear shortly is in connection with the Stunt Schedule. Feelings are that the schedule should be brought more into line with the A.M.A. programme, and a much greater degree of precision demanded in future contests.

Scotland

The **ANGUS AND D.A.M.** League's individual championship has been won by K. B. Whyte of Montrose. In the final contest of the season he won the power event with a total of 6 : 30, runner-up being Bruce Lamb (Buckhaven) with 5 : 05. The open rubber event went to Ron Robertson, also of Buckhaven, with 7 : 10, Whyte placing second with 5 : 20.

The **MONTROSE M.A.C.** shared their flying field with the rest of the N.E. Area on September 2nd for the "Aberdeen Express Cup", making its first visit to Montrose. As mentioned above, Whyte and Lamb proved to have the best machines, models being A.P.S. "Swiss Miss" and "Eliminator". As a change from prang-burning and other post-contest events, the Buckburn and Montrose clubs held a grand joint search of the undergrowth west of the aerodrome which lasted most of the evening. Search was for D. L. Petrie's "Upstairs Maid" which vanished on a trimming flight, and is still missing.

Local history was made this year when **BUCKSBURN A.T.** broke the Montrose/Dundee monopoly of the Angus and D. League's "Strathmore Trophy", which goes annually to the club whose team scores most in the League's series of F/F events. Final tally was 2,114, with Montrose just behind with 1,916—the narrowest decision on record. This energetic club also organised a bus to the P.A.A. events at Abbotsinch, learning a lot about power flying from the "3 x 3" perfectionists from that place across the Tweed.

North Western

The **WALLASEY M.A.C.** open day on August 12th was cold and blustery, so a 1¼ min maximum was the order of the day. John O'Donnell proved champ., flying his A/2 design, with Malcolm Watson (also of Whitefield) second, and John Done of Wallasey third. Current interest in the club at present is in Stan Hind's ducted fan model, being an o.d based on the Mig 15. With a centrally-mounted wing of 30 in. span with moderate sweep back on the leading edge, power is by Amco, and initial tests are very promising. Fuselage is of fibreglass.

Five members of the **WIGAN M.A.C.** made the trip to the P.A.A. Festival at Abbotsinch to find virtually a N.W. Area meeting in progress! Appreciation is expressed of the successes of Messrs Rhead, Talbot and Aspinall, who upheld the club prestige, also of Mr. Cochrane and a very co-operative farmer for arranging a very convenient camping site. At Turnhill on September 9th E. Anderton placed top junior in the power event with 8 : 00 plus.

Ireland

The **BELFAST M.F.C.** acted as hosts to to the English and Scottish teams at Toome for the U.K. Challenge Match, when to the delight(?) of the seniors, 13-year-old Brian Wicklow made the highest time in the N. Ireland team, placing second to Amor of the English glider section. The high wind and proximity of Lough Neagh caused six models to be lost, four of which have since been returned—one from a watery grave. The sporting friendliness between the teams made for smooth running of the contests, which were witnessed by the largest crowd ever seen at an Irish competition. In fact—a good time was had by all!

Southern

Showpiece of the Isle of Wight Model Engineering Society's exhibition was an electric-powered S.55 helicopter, this being a joint effort by members under the chairman, J. Hitchman. Vertical, horizontal and hovering flight was demonstrated, and the 1955 rescue of a sick keeper from Bembridge fort was re-enacted most realistically. First prize in the aircraft section went to K. Humber of Valient Heights with an E.D. Racer powered Mc.110.

Midland

Now that combat jobs are being built stronger, the **WEST BROMWICH M.A.C.** boys would like stronger lines to go with them! At the S. Midland Rally the boys finished up with two sets of lines out of the original eight. Dave Wilkes flying into first place with one of the remaining sets. Bad luck and high wind robbed them of a first in Class A. F.R. for Mac Grimmitt's model was lapping at 90 m.p.h. in the final, and had established a lead of 15 laps when the breeze blew a squeeze bottle into the prop, the resulting delay for prop change losing them the battle by two laps.

Bad weather has restricted the activities of the **LEAMINGTON M.C.**, but plenty of fun is being had indoors. They have developed a system of r.t.p. combat, three models at a time on three swivels spaced at 3-inch intervals, lowest being 30 in. from the deck. All models are rubber driven, and 2 ft. streamers are used, the lines very rarely tangling.

Four of the **FORESTERS (Nottingham) M.F.C.** journeyed up to Abbotsinch, having an enjoyable but wet time. Arthur Rhodes won Class A t/r, with John Howard placing third in the same event, and second in combat. The opposition was much stronger than is generally experienced at Southern Meetings. The S. Midland Rally was on the same date, so only one of the Forester's museum pieces was in attendance, but was unfortunately prangued, thus ending the sequence of 21 consecutive finals in which a Foresters model has been represented.

London

ENFIELD AND D.M.A.C. flyers are finding things a bit hectic with three meetings in three weeks; the result being that the Class B boys are in danger of being fagged completely in all three—the juniors are jubilant that Mike Pinnock should take second in combat at both the London and S. Midland do's—and that Pete Hartwell should win the Class A at Cranfield. Hartwell reckons that the hardest part is not winning, but trying to get rid of 18 bottles of fuel afterwards! Funnicky isn't he?

J. Baguley of the **HAYES M.A.C.** won the prize for outstanding model of the Fairey Horticultural exhibition for the second year in succession, while another member, Frank Blows, carried off the magnificent trophy for the best exhibit by a Fairey apprentice with his R/C model. Four members scored over 10 min. each in the K. & M.A.A. event, Welbourne placing fourth in the collated results. (These four

For Your Diary

October 21st
Hyde Rally—Hyde, Cheshire—all classes.

October 21st
Frog Senior Cup—U/R Power—Decentr.

November 18th
CMA Cup—U/R Glider
Flight Cup—U/R Rubber } Decentr.

include a junior who is KEEN and builds MODEL AIRPLANES! Negotiations on transfer fees should be conducted with the Secretary.) The club goes indoors at Townfield School, Hayes, on October 3rd, meeting fortnightly from that date. If you're not engaged in rockin', rollin', playing poker, or employed in any equally depraved pastime, why not go along?

South Midland

NORTHAMPTON M.A.C. are to revive their annual dinner this year, having apparently got over their financial difficulties. Chairman Bert Revell told an amusing story of what occurred to him whilst in Copenhagen on the return trip from the Wakefield contest. Wishing to buy a pipe as a souvenir, he thought it a good idea, having had certain difficulties with language, to carefully write down on a piece of paper all that the sales ticket in the window said. This done, he marched into the shop highly pleased with himself, went straight up to the counter and presented his carefully compiled paper to the young man behind the counter who promptly said in good English, "Ah—you wish to buy a pipe, sir". Was Bert's face red!

South Eastern

Congratulations to Keith Donald of **SOUTHERN CROSS A.C.**, who has proved he has not been wasting his Saturday evenings by becoming engaged to Miss Jean Harris.

The **RYE MODELLERS CLUB** staged a very successful exhibition recently, but the highlight of their report is surely that they have called the bluff of the local council on the question of flying in local parks. After much negotiation, the club learnt that the threatened application for a byelaw had in fact not been submitted, and it is unlikely that they will now do so. A club tableaux on the question of "the abominable noise that causes intolerable suffering" (quote from a local resident) brought the boys first prize, £5 and a silver cup. It's an ill wind . . .

Western

In addition to mass-producing combat jobs, Brian Hopkins of the **SOUTH BRISTOL M.A.C.** has nearly finished a 7-ft. span Bristol "Wayfarer", and hopes that two 9-ox 35's versus 11 lb. of model will drag it around at about scale speed. The combat boys are pleased with themselves, having won the events at the Trowbridge Gala, and a recent three-cornered display at Bath. The number of models wrecked in the process does not bear thinking about.

Combat and stunt seem to be the vogue in the **BRISTOL ACES A.M.C.** at the moment, though many are talking about building .5 c.c. f.f. models, and a 54-inch span tailless glider is under construction. George Ford won the rubber event at Keevil on September 2nd, flying a Mercury Mentor, best flight being 1 : 44.

North Eastern

In the recent N.E. contests **TYNEMOUTH M.A.C.** almost cleared the board again, Messrs. Stoker (glider and stunt), Oswell (combat), Pollard (rubber) and Ford (power) leaving little for the others. Glider exponent Ron Pollard only managed 9 : 57 (28th place) in the K & M.A.A., though one of his flights lasted no less than 7 : 20. Ah, those maximum clock-offs!

South Western

The inaugural get-together rally of the newly-formed **SOUTH WEST RADIO CONTROLLED M.F.S.** was held on Woodbury Common on September 16th when a gratifying response gave a good send off to the group. Monthly contests have been arranged starting October 14th at Salcombe, or if not available at Plymouth. The Woodbury meeting saw good flying by H. O'Heffernan, who made consistent target landings with his twin-rudder RGB, powered by Ameco 25, whilst H. Stillings demonstrated the fast flying aerobatic qualities of his old "Zoom" (53-inch span with Ameco 3·5). Any R/C beginner or veteran in the area is cordially invited to contact the Hon. Sec. H. Stillings, 6 Alpha Street, Exeter, for details.

Pen Pals Wanted

For D. Greenfield, 4003 50th. S.W., Seattle 6, Washington, U.S.A., who is anxious to establish contact with a German enthusiast.

In the opposite direction, Michael Patient, now serving in the R.A.F., but whose home address is 29 Dancer Road, Richmond, Surrey, would like to correspond with an American modeller.

And so we say farewell for yet another month, and as the sun sets over the rose-tinted roofs of Watford, we . . . O.K., lead us away!

THE CLUBMAN.

NEW CLUBS

QUEENSBURY AND DISTRICT M.A.C.
A. Cox,
85 Overton Drive,
Stanmore, Middlesex.

WEST LONDON M.A.C.
(formerly Fulham M.A.C.)
J. G. Meech,
17 Clarendon Drive,
Putney, S.W.15.

S.M.A.E CONTEST RESULTS

September 9th, 1956
HALIFAX TROPHY

F.A.I. Power			(27 entries)
1.	M. Gaster	C.M.	15:00 – 1·26
2.	S. Lanfranchi	Bradford	14·29
3.	R. Draper	Coventry	14·37
4.	A. Spurr	Middlesboro'	14·36
5.	D. Posner	N.W. Midds.	14·35
6.	B. Eagleston	Whitefield*	14·17

K.M.A.A. CUP

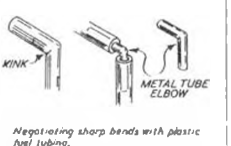
A/2 Glider			(120 entries)
1.	I. Palmer	Croydon	11·58
2.	B. Thorogood	Mill Hill	11·45
3.	P. Giggle	Southampton	11·42
4.	E. Wellbourne	Hayes	11·30
5.	R. Burwood	Blackheath	11·34
6.	L. Hey	Leeds	11·27

RALLY RESULTS
1956 P.A.A. SCOTTISH FESTIVAL

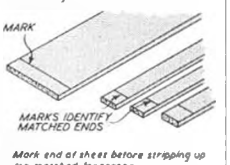
American Class P.A.I			
1.	J. Done	Wallasey	5 : 56
2.	A. Farrar	Wakefield	5 : 25
Int. P.A.I Load			
1.	R. Parsons	Prestwick	4 : 46
Clipper Cargo P.A.I			
	J. Hudley	Eng. Elec.	
Power			
1.	J. O'Donnell	Whitefields	18 : 00
2.	J. Eckersley	Bradford	16 : 11
Rubber			
1.	J. O'Donnell	Whitefields	9 : 00
2.	T. Rhead	Wigan	8 : 57
Glider			
1.	S. Hinds	Wallasey	8 : 29
2.	D. Jackson	Ashton	2 : 13
Radio Control			
1.	G. Parkinson	Kendal	227 pts.
2.	W. Airey	Kendal	204 ,,
Class A Team Race			
	J. Howard	Foresters	
	R. McFarlane	Barnstormers	
Class A Combat			
	R. McCabe	Barnstormers	
	J. Howard	Foresters	
Class B Combat			
	A. Farrar	Huddersfield	
P.A.I Load Cld. Endurance			
1.	Dunn	Perth	2 mins.
Brit Junior			
	E. McCabe	Barnstormers	

··quickies

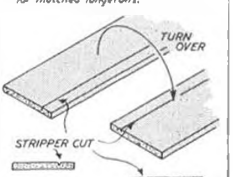
Stick on lettering cut from coloured tissue sandwiched between thick paper.



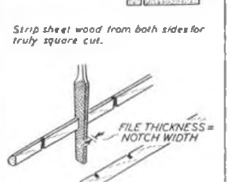
Negotiating sharp bends with plastic fuel tubing.



Mark end of sheet before stripping up for matched tongerons.



Strip sheet wood from both sides for truly square cut.



Accurate notches in spars and ribs are easily cut with a file.

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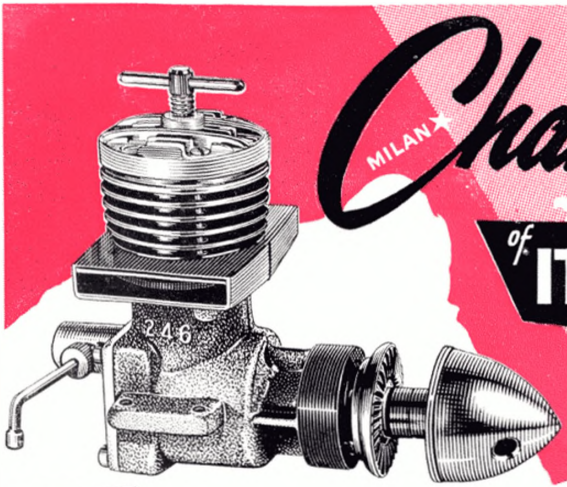

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