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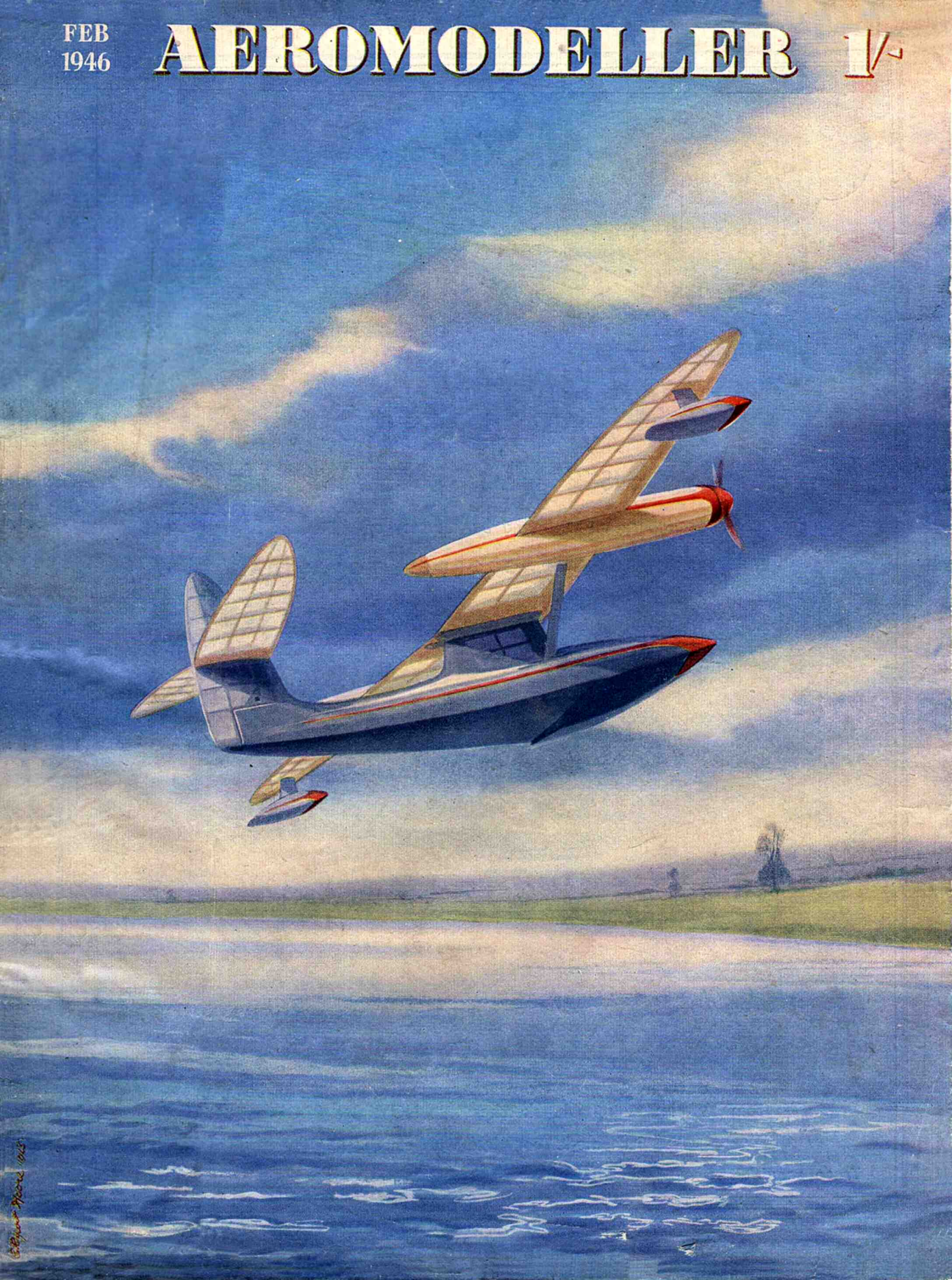

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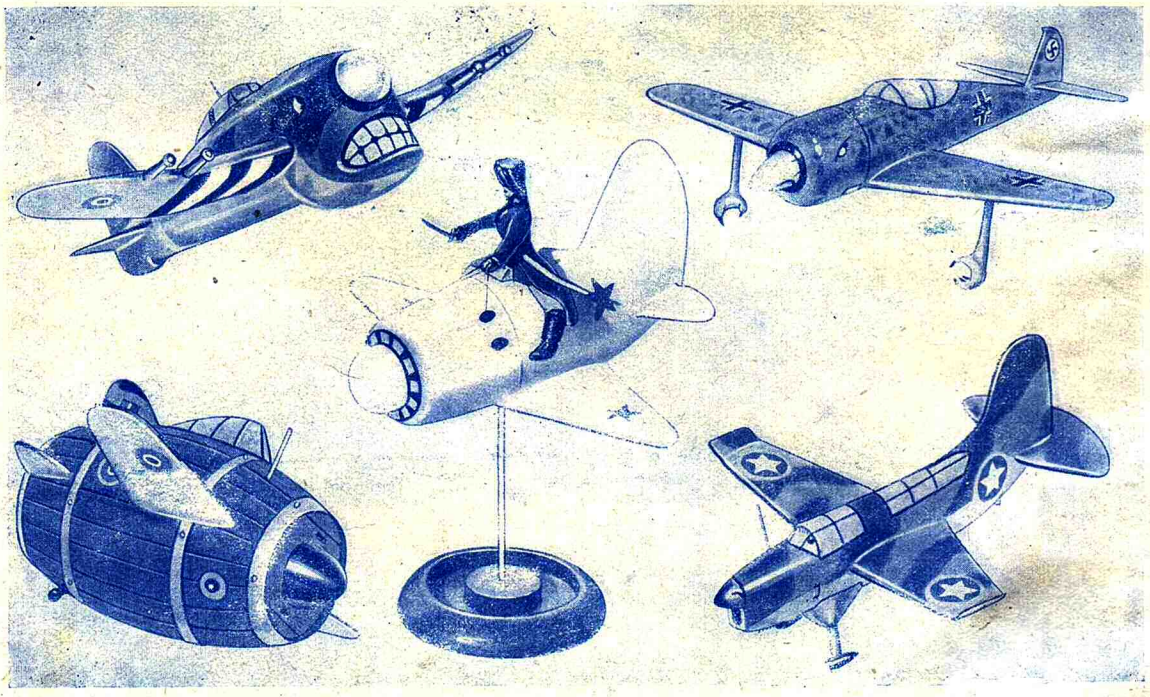

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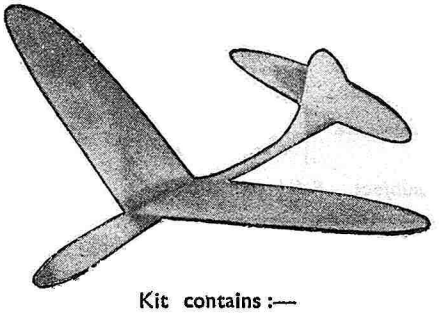

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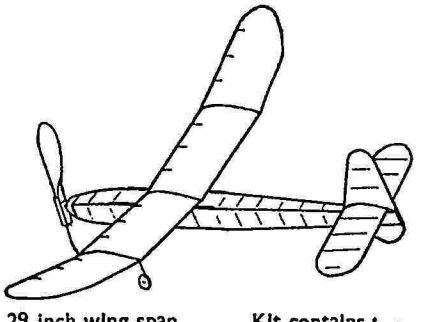

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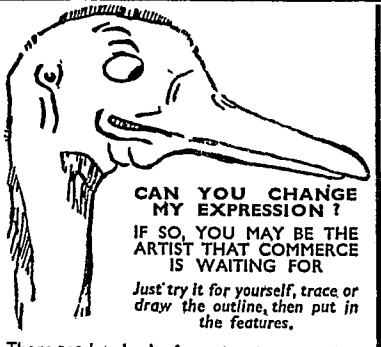

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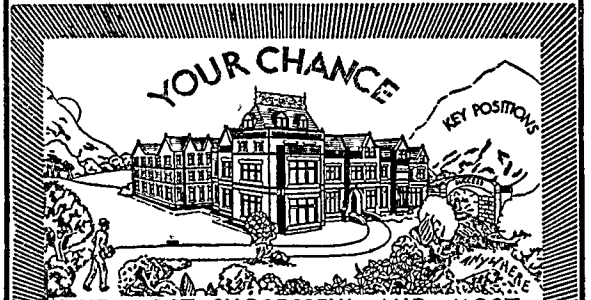

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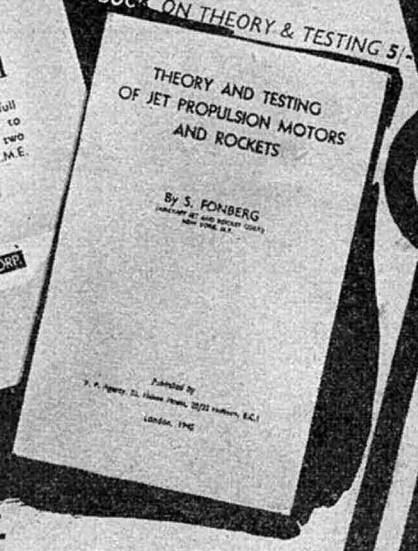

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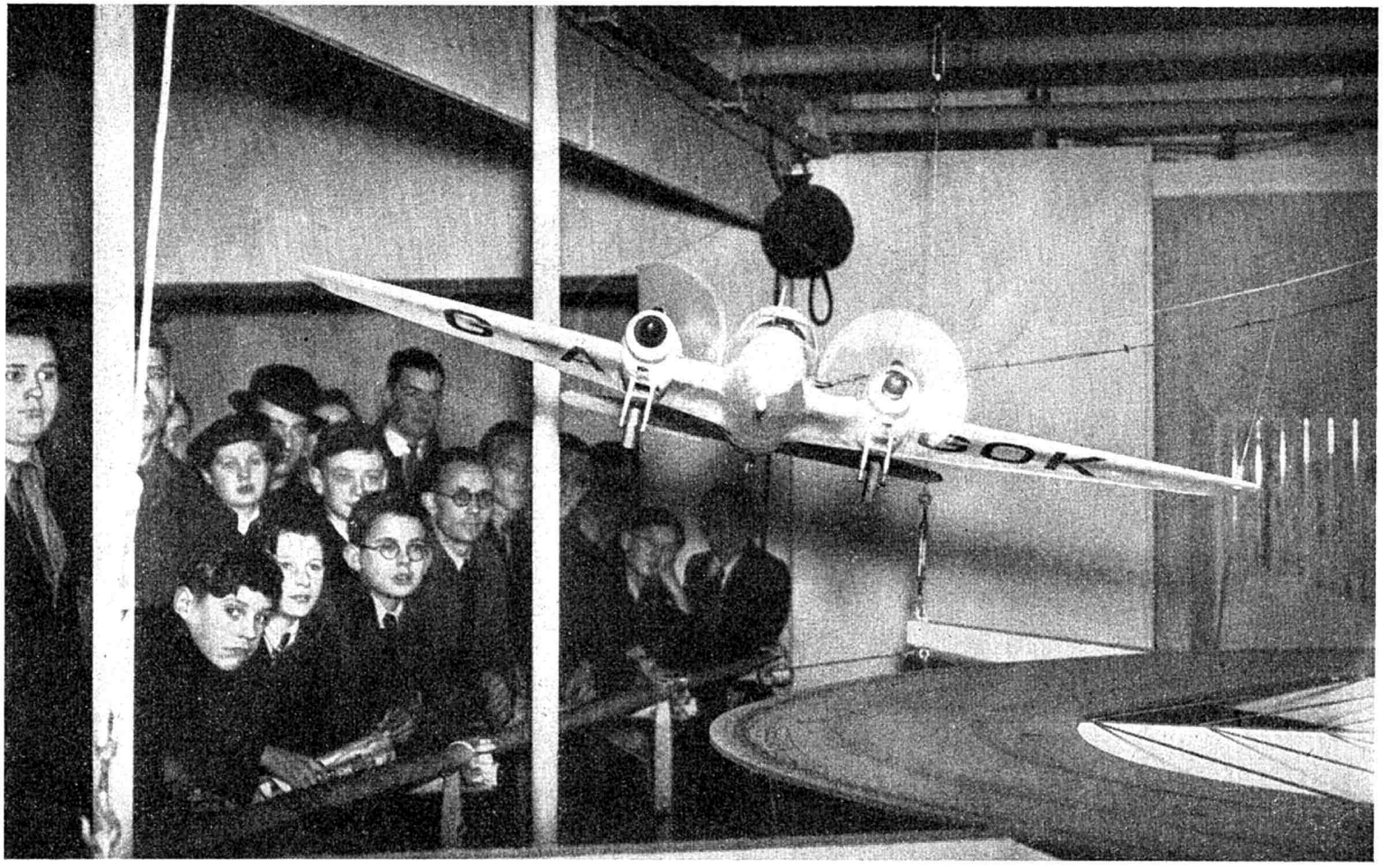


A.T.P. Photo.

EXHIBITION HIGHLIGHT. An admiring crowd watches the electrically-driven Vickers Viking, under full throttle, climb rapidly away from its Perspex landing strip.

EDITORIAL

"JOLLY GOOD SHOW"

THE vital contribution that aeromodellers can make to Britain's pre-eminence in the air, and the vigorous lead to the movement given by Mr. D. A. Russell and his staff, were points stressed by Admiral (Air) Sir Denis Boyd, and by Lord Balfour, a former Under-Secretary of State for Air, at the opening of Britain's Second National Model Aircraft Exhibition at Dorland Hall, London, on December 14th last.

By far the most impressive display of models brought together under one roof was to be seen at the Exhibition. There were about 2,000, ranging from the tiniest of solid replicas of full-size designs to petrol-engined types large enough to lend themselves to operation by radio; they were all insured for no less than £25,000. The Exhibition afforded convincing evidence of the ingenuity, artistry and technical skill of the aeromodelling community, and served to emphasise the absurdity of the Board of Trade classification of model aircraft as "toys." This last point was emphasised by Mr. Russell in his speech introducing Sir Denis Boyd, and is one that he has worked assiduously to bring home to the powers-that-be and to the general public.

Sir Denis Boyd, in opening the Exhibition, declared that it was much better even than the previous one, and that the work of Mr. Russell and his team, culminating in this magnificent display and in the establishing of Eaton Bray, the first aerodrome in the world to be developed especially for the use of modellers, was of vital importance to aviation. "Jolly good show," he added. Lord Balfour pointed out that Britain's future depended upon being first in Service and Civil Aviation, and that aeromodellers had a distinctive contribution to make to that end. Everyone who spent time and skill in building and flying models was doing work of National Importance. Also present was Lord Winster, Minister of Civil Aviation, who said there were no politics in aviation, all parties having a keen desire to see Britain first in the air.

Among those who supported the Opening Ceremony were sixteen earls, eight baronets and knights, and many figures of eminence in aviation. Comment on the almost bewildering number and variety of models was frequent, and many tributes were paid to the quality of the construction. The 2,000 models had been unpacked, assembled, labelled and arranged in the huge glass cases in two days and a half by the AEROMODELLER staff under the Technical Editor, Squadron Leader Peter Hunt. This staff has recently been augmented and, as mentioned by Mr. Russell at the opening of the Exhibition, over 60 per cent. had served in the Armed Forces. The general verdict was that a herculean task had been accomplished with outstanding success.

One of the most difficult jobs was the judging of the models. This was undertaken by a special committee under the chairmanship of Mr. Russell, and was not completed until noon of the day before the Exhibition opened. Nevertheless, despite the difficult conditions still prevailing in the printing trade, the full list of prize winners was printed that night and included in the Exhibition catalogues which were available at the Opening next morning.

A detailed description of the Exhibition begins elsewhere in this issue and will be completed next month. Magnificent co-operation was forthcoming from clubs and other organisations, individual modellers all over the country, and members of the Trade. Only the S.M.A.E. (officially) held aloof, though individually this group was represented by the work of numerous members of the rank and file who in this matter showed a better judgment and broader outlook than their leaders. Diverse indeed were the models that won the senior and junior championships. Mr. K. A. Vicars, of Reading, senior champion, showed a remarkable little replica of the Hawker Hind biplane day-bomber, with a wealth of accurate detail, including metal-clad nose, air scoop, oil cooler, gun-sight, gun on ring, navigation lights, and a spinner formed from solid Dural. The Wakefield Cup type duration model shown by the junior champion, Mr. J. G. Hearn, of Clapham Common, was a neat and business-like shoulder-wing job, with a circular-section fuselage, plug-in bamboo undercarriage and a single blade airscrew.

Midget solid replicas of full-size designs were on view in amazing variety. The types reproduced included the original Wright biplane of 1903, the Cody "Cathedral," an early Bleriot, such famous 1914-18 war types as the Camel, S.E.5, Fokker triplane, and Bristol fighter, most British military and civil types between the wars, thoroughbreds of the recent conflict, and such recent types as the Miles tandem. Prominent among the large flying-scale models were Mr. C. Rupert Moore's Blenheim, fitted with his ingenious wing drive and retracting undercarriage, his Tiger Moth, and—by other modellers—several Tempests, a Typhoon, several Lysanders, and a Hamilcar glider.

High-performance sailplanes were there in abundance, the most impressive being the beautifully finished and shapely "Apocalypse." Another interesting machine was a rocket-driven catapult-launched high-wing with a speed of some 60 miles an hour, produced by a commercial concern for gunnery training. Petrol-engined models included several flying-boats, a scale Albacore biplane, and two Lysanders. Motors on view included a range of experimental Diesels, of from 1 c.c. to 4·5, the work of Aeromodeller Research Department, an inverted twin-cylinder two-stroke, and several "original designs."

Great interest was shown in the large relief model of the 75-acre Eaton Bray Model Sportsdrome, with its clusters of Lilliputian modellers gathered around the four concrete take-off areas or indulging in control line flying, and doubtless many of the visitors will recall and act upon the slogan which sped them on their homeward way as they left Dorland Hall—"See you at Eaton Bray!" To many, however, the high-spot of the Exhibition was the tethered flying by the remote-controlled electric-motored Vickers "Viking" and "Vertric," a high-wing, from the two elevated circular Perspex landing-strips. Among those who operated these fascinating craft were Lord Balfour and Sir Algernon Willis, the Second Sea Lord.

The full-size Vickers V.C.1 Viking is a medium-range civil transport incorporating all the reliability of the famous "Wimpey" Wellington bomber. In standard form it is a 27-seater, but a de luxe model is available with accommodation for 21 passengers. Span is just

over 80 ft., and the motors are two 1,675 h.p. Bristol Hercules 130 two-row 14-cylinder air-cooled sleeve-valve radials. Maximum cruising speed is 252 miles an hour, and the still-air range is 1,000 miles at 210 miles an hour.

The model " Viking " at Dorland Hall, and most of its electrical apparatus, were the work of Mr. J. S. Evans, whose electric-motored " Magister " flew over 1,000 miles at the previous Exhibition early in 1945. Throughout the recent show, the Viking model was maintained by the AEROMODELLER staff. With a wing-span of over 40 ins., this model was most impressive, and its two tiny motors, each with its own remotely-controlled throttle, were in themselves works of art. It was fascinating to watch the sequence of starting-up, take-off, wheel retraction, flight at speed, throttling back, extension of wheels, and, finally, touch-down. Ingenious devices ensured safety from crash landings, the wheels dropping immediately in the event of a motor stalling. The little " Vertric," which was designed and built by Flight-Lieutenant Tucker, of the AEROMODELLER technical staff, was a shapely high-wing cabin job with elliptical wings, and elevator control.

Constructional kits for many types of model, accessories, petrol motors, all were in evidence on the Trade stands. There was also a wide range of aeronautical publications and constructional plans of models. It was shown in unmistakable fashion that the AEROMODELLER, and the firms co-operating in this Exhibition, were all-out to ensure abundant quantities of first-class goods to meet the keen aeromodeller's every need at the earliest possible moment.

Easily eclipsing in every respect the first Exhibition, this second venture is confidently expected by the organisers to be eclipsed in its turn by the third Exhibition, which is to be held next December. As is well known, it was, from the first, Mr. Russell's intention to make this an annual affair ; and, in point of fact, Dorland Hall has already been booked for the third Exhibition. After that, indications are that he will be confronted with the knotty problem of securing a larger building !

Prizes for Spotting Japs

One of the most interesting of the publications on sale at Dorland Hall was " Japanese Aircraft," produced by John Stroud, in co-operation with the Harborough Publishing Company, Ltd., and we are glad to announce a competition in Aircraft Identification, based on this book, for which we are offering prizes totalling £100.

Aircraft Identification is a subject in which a truly phenomenal interest has been shown in recent years, and while the Royal Observer Corps may be said to have brought the art to a fine pitch of perfection, a remarkable ability has also been shown by members of the Services, the pre-Service training organisations, the Scouts, and even the Guides. But there has been one branch of the subject on which information has been somewhat meagre. Japanese types. This gap in aeronautical knowledge need no longer exist, for Mr. Stroud's book is as detailed and comprehensive as it is fascinating ; in fact, it raises the whole subject to a new high level, and disposes of the shallow notion that the Japs were merely copyists and poor copyists at that.

The volume, which is 8½ ins. deep and 10¾ ins. wide, contains 64 pages packed with interesting information on every aspect of Japanese aircraft development. It is bound in stout blue covers, gold blocked, and costs 25s. In addition to being a thoroughly dependable work of reference, it forms an excellent souvenir of the Far Eastern war that ended with so big a bang ! There are 84 pictures of first-line aircraft, with descriptive matter and numerous delightful little flying pictures, all in colour ; many photographs of transport and trainer types ; silhouettes and small photographs of second-line types ; 55 photographs and brief explanatory details of types developed by the various Japanese aircraft firms during the past few years ; 14 silhouettes of new types ; a complete list of technical terms ; a description of the Allied system of code names ; and a two-page coloured map of the Pacific War Zone, with explanatory notes.

For the competition, sets of the sheets that form the book have been cut up, and one hundred " bits and pieces " arranged in the form of a two-page spread. A first prize of £50 is offered for the greatest number identified, there is a second prize of £30, a third of £15, and a fourth of £5. If more than one reader names all the aircraft cuttings correctly, the whole of the prize money (£100) will be divided equally between those readers who correctly identify all the aircraft, and the second, third and fourth prizes will not be awarded. Competitors are not required to work from memory, but may make the fullest use of John Stroud's book.

Apart from the interest of the contest and the prizes to be won, the book itself is well worth having. It constitutes the *only* Standard Reference Book dealing with the whole of range Japanese aircraft, in fact, it represents the only serious attempt to describe the Far East conflict *in terms of the aircraft taking part in it.*

Full details of the competition will be found elsewhere in this issue, and we invite readers to obtain a copy of the book and get down to the pleasurable business of spotting the Japs and qualifying for one of the prizes offered. Copies may be obtained from any model shop, W. H. Smith's bookstall, or local bookseller ; or post free from the Publishers at Leicester.

Aircraft of the Fighting Powers. Vol. VI

We are asked by the Harborough Publishing Company Limited, to point out that all prepaid orders for copies of Volume VI of " Aircraft of the Fighting Powers " received at the Company's Leicester office have been despatched—the vast majority of them, as promised, before Christmas.

Recently, 25 or 30 letters have been received complaining of non-delivery of copies ordered towards the end of last year, and, on examining these letters, it is noted that the name of the writer of nearly every one commences with a " W ".

From this it would appear that either a batch of labels has been mislaid or, if the copies were despatched, a batch of parcels has been lost.

Very few readers acknowledge safe receipt of their copies when they are delivered and thus the Harborough Company is left in ignorance as to whether these copies have since been received. Any customer who is still without a copy ordered before Christmas is asked to write in immediately, when a further copy, if necessary, will be sent at once.

We are also asked to announce that issue 4 of " Air Review " was published a few days ago and is now available on bookstalls throughout the country.

BRITAIN'S SECOND NATIONAL MODEL AIRCRAFT EXHIBITION

DORLAND HALL, DEC 1945—JAN. 1946

Sport and General Photo.

DESCRIBED FOR "AEROMODELLER" READERS BY D · J · LAIDLAW-DIXON

THE "AEROMODELLER'S" enterprise in presenting Britain's Second National Model Aircraft Exhibition at Dorland Hall has provided London with a spectacle that will long be remembered—remembered indeed, it is hoped, until next year's even more ambitious effort arrives to eclipse it!

This has been made possible by the enthusiastic support of aeromodellers from all over the country—from Cornwall to Fife—and from literally hundreds of towns and villages—who have sent in entries numbering nearly 2,500 and insured for £25,000. Useful support from "the Trade" has enabled the organisers to present a truly post-war exhibition with McGillicuddy's words, "bounteous balsa," supplies of strip rubber, and—yes—even the first post-war samples of petrol engines for the eager visitor.

The excellent show put on for eight days in January, 1945, when the menace of enemy air power still hung over the city, accounts, no doubt, for the long list of acceptances from distinguished guests who attended the opening ceremony on Friday, December 14th. These three hundred famous figures in full-size aviation, politics, publicity and the aeromodelling world included:

Vice-Admiral (Air) Sir Denis Boyd, K.C.B., C.B.E., D.S.C., the Rt. Hon. Lord Balfour of Inchyre, P.C., M.C., the Rt. Hon. Lord Winster, Minister of Civil Aviation, the Marquess of Aberdeen and Temair, O.B.E., the Earl of Amherst, M.C., the Marquess of Ely, the Rt. Hon. Earl Howe, P.C., C.B.E., the Earl of Huntingdon, Lord Airedale, Lord Derwent, Lord Palmer, Lt.-Col. Rothschild, Sir Frederick Handley Page, Sir Alliott Verdon-Roe, Sir Stephen Tallents, K.C.M.G., CB.., C.B.E., Sir Lionel Preston, K.C.B., Sir Robert Bird, Bt., M.R.I., J.P., Vice-Admiral Sir Algernon U. Willis, K.C.B., D.S.O., Rear-Admiral M. M. Denny, C.B., D.S.O., Rear-Admiral M. S. Slattery, Vice-Controller (Air) The Admiralty, Air Marshal Sir Leslie N. Hollinghurst, K.B.E., C.B., D.F.C., Air Vice-Marshal Sir Thomas W. Elmhirst, C.B., K.B.E., D.F.C., Air Vice-Marshal Sir William Elliott, C.B., K.B.E., D.F.C., A. J. Camm, Esq., Ministry of Aircraft Production; Rear-Admiral T. Troubridge, C.B., D.S.O., Fifth Sea Lord of the Admiralty, J. W. Bispham, Esq., and E. W. Savage, Esq., Education

Above. Lord Balfour goes solo on the Vickers Viking. On the right, Lord Winster, Minister of Civil Aviation, at the microphone, shares a joke with Vice-Admiral Boyd and Lady Boyd.

Royal visitors on January 4th. From left to right, Mrs. D. A. Russell, H.R.H. the Duchess of Kent, H.R.H. the Duke of Kent (holding a duration model built by a member of the "Aeromodeller" staff and presented to him by Mr. Russell), Michael Russell, Mr. Russell (talking to the young Princess), Captain the Lord Herbert and Mr. Van der Borgh.

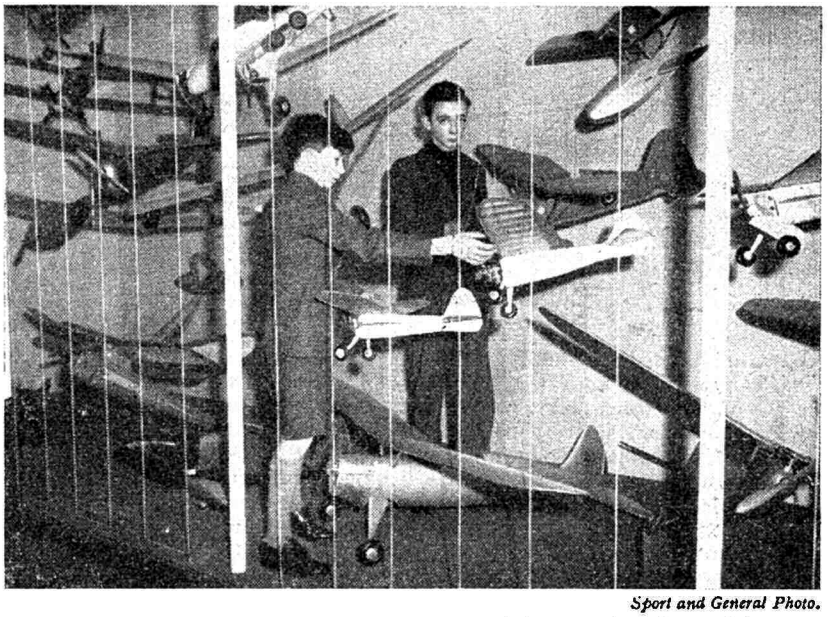
Squadron Leader Hunt, centre, who organised the handling of the models at the Exhibition, discusses points with two R.A.F. visitors.

Dept., L.C.C., Colonel Enver Aka, Turkish Military Air Attache, General Nikolai P. Fastovschuk, Red Army Air Force and Air Attache Federal Peoples' Republic of Yugoslavia, Commander Nils Brammer, Asst. Naval Attache, Royal Danish Navy, I. J. Hayward, Esq., Chairman, Education Committee, L.C.C., James Stanton, Esq., of S.B.A.C., C. G. Grey, Esq., Mr. and Mrs. L. Gabe, Lt.-Col. and Mrs. Bowden, F. W. McKenna, Esq., of Gloster Aircraft, Leonard Taylor, Esq., "A.T.C. Gazette," Charles W. Cain, Esq., Editor, "Aeroplane Spotter," R. T. Deller, Esq., Horace Marshall & Son, Ltd., F. J. Camm, Esq., "Practical Mechanics," A. S. Mitchell, Esq., *Daily Telegraph*, J. R. Tildsley, Esq., Horace Marshall & Son, H. J. Penrose of Westland Aircraft, V. R. Caradine, Esq., of National Bank, Brigadier H. S. Brown, Rex Pierson, Esq., of Vickers-Armstrongs, H. Victor Paine, of Vickers-Armstrongs, P. W. S. Bulman, Esq., Hawker Siddeley Aircraft, Ltd., U. Kindelan, Esq., Spanish Embassy, F. Gammons, Esq., Vickers-Armstrongs, Roy Passmore, Esq., of Albaster, Passmore & Sons, Ltd., H. J. Thomas, Esq., of Bristol Aircraft, W. Broadbent, Esq., of Fairey Aviation, J. Lister Walsh, Esq., of Saunders Roe, R. V. Perfect, Esq., of Saunders Roe, R. Rhodes, Esq., J. Summers, of Vickers-Armstrongs.

The Exhibition was formally opened by Vice-Admiral Sir Denis Boyd, Admiral (Air), who was introduced in a few well chosen words by Mr. D. A. Russell, M.I.Mech.E., Managing Editor of the AEROMODELLER. In his preliminary remarks Mr. Russell paid tribute to the efforts put in by all concerned in the preparatory work. To quote from *The Times* report of the opening ceremony :—

"Sir Denis Boyd said that at the recent exhibition of British and German aircraft at Farnborough he was impressed by the fact that, with one or two exceptions, the British machines were artistic and beautiful, whilst the German aircraft had been 'built by people who had crooked minds who built crooked aircraft.' The artistic

General Fastovschuk of the Red Army Air Force chats with Mr. L. G. Temple, centre, and Mr. A. H. Lukins, Editor of "Air Review," right.



Timothy Russell and a friend cast admiring glances on the galaxy of petrol model exhibits.

Sport and General Photo.

models in the exhibition were a contribution to the Art of British Aviation."

Lord Balfour of Inchyre said that Britain's future was in being first in the air. There was nothing of Jingoism in such an ambition and model aircraft enthusiasts were making a contribution towards that objective.

Lord Winster, Minister of Civil Aviation, commented "that whatever differences there might be on the politics of Civil Aviation and the method of operating services, everyone in this country was of one mind in wanting to see British civil aviation second to none."

Space does not permit of quotations from the many other national Press notices of the show; let it suffice to say that almost without exception every daily national and provincial newspaper of standing carried a report—and in these days when papers are limited to a scant four or six pages! This welcome sign is a sure indication that our hobby has achieved "national" status—and for this alone the AEROMODELLER would consider its years of patient propaganda and the arduous work of presenting such an exhibition amply rewarded.

No pains had been spared to make this Exhibition worthy of the great hobby it displayed. The artistic genius of the architect, Mr. John Lansdell, F.R.S.A., N.R.D., enabled the models to be arranged to the utmost advantage. In such a part of excellence the visitor is all too apt to be bemused by the wealth of talent and variety. To overcome this visual indigestion display cases were staggered so that exhibits were unfolded section by section. Let us accompany a typical visitor on his tour. The time is mid-afternoon when every aisle is thronged with sightseers and a cheerful buzz of conversation drowns all but the tones of the loudspeaker inviting visitors to watch remote control flying.

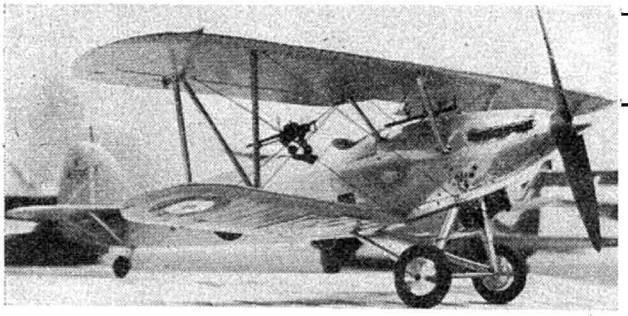
Entering the main hall, an immense copy of the AEROMODELLER opens to release a stream of models that continue in an unending twisting, turning, banking stream through the whole length of the Exhibition. On the right an AEROMODELLER stand displays the Exhibition Guide, copies of "Planfare"—the latest plan-book—and is enlivened by Howard Boys' rocket-propelled model which is poised in mid-air, in the background a life-size photo of the same model performing at Eaton Bray may be seen.

The glass cabinets containing solid scale models next catch the eye. Arranged on glass shelves or suspended in the air they amaze with their variety of size and type—while their almost uniform excellence made judging a particularly difficult task. Dominating the first cabinet is K. A. Vicars' Hawker Hind—a deserved winner of its class, Senior Champion of the show.

This beautiful model is especially remarkable in that the whole of the fuselage back to the cockpit was made from a single block of duralumin, and shaped with the use of *hand tools only*. The miniatures of under 1/72nd scale offer a feast for the miniaturist—detail of such delicacy requires more than ordinary patience.

A welcome sight is the revival of interests in "old-timers," nearly a hundred entries being devoted to these "early birds." C. B. Maycock's 1903 Wright Biplane attracts the eye. By a subtle use of perspex in the construction the transparency of the fabric-covered wings is skilfully portrayed. D. S. Larner's

Visitors study a collection of models in one of the showcases. Scale enthusiasts will probably identify many famous machines from this photograph.



SENIOR CHAMPIONSHIP WINNER.

K. A. Vicars, Reading—Hawker "Hind" detailed solid scale model of duralumin and wood.

beautifully finished Shooting Star is another model that cannot fail to appeal. The quality of workmanship in the under-sixteen class is worthy of special comment.

The solids can scarcely be left without reference to F./Lt. Buddle's own-design prototype H.B.I.—excluded by its subject from the main prize list but awarded a special mention. This highly detailed free-lance effort in polished metal moved even *Daily Express* "Hickey" to amazed comment!

Scale models are next arrayed in a spacious cabinet and include C. Rupert Moore's Blenheim and Tiger Moth—famous for their designer's fertile use of really workable innovations that bring the scale model, no matter how complex or multi-engined, into the true flying class! H. C. Baines' Leopard Moth was exhibited in an uncovered state that well displayed the pains-taking work that has gone into its making. Movable control surfaces and folding wings, as in the prototype, are special features. D. H. Elmes' Ryan P.T.16 is another winner of particular beauty. Though hardly 15 ins. in span the miniature is metal-covered and fully detailed without increasing the weight to an extent that would impair its excellent flying possibilities.

Glider and sailplane entries were far in excess of expectations and, present a truly splendid array of all shapes and sizes from 2 to 9 ft. in wing span. G. E. Dunmore of Leicester took a deserved first place with two models. Firstly, his all-red sailplane that features micrometer adjustment to ailerons, full elevator control and built-up wing-ribs. For display purposes a section of the wing is perspex-covered, giving an excellent impression of the work that went into its construction. Something like 2,800 hours' work were involved in the production of this masterpiece. Secondly, his Kirby Cadet—a fine scale type that invites inspection. Another notable sailplane is F. Smith's 9 ft. "Apocalypse," whose brilliant yellow colour scheme helps it to dominate the show case where it is displayed. Aeromodeller Plans Service has acquired plans of this model and will shortly be offering them to readers. Nor must E. W. Evans' "Avis" sailplane be forgotten. Delicate workmanship and fine lines make this a memorable model. The designer has incorporated an extremely neat dethermaliser that releases a short metal bar after a predetermined flight and so alters the trim.

Duration models in the main show a pleasing trend away from feather-light slabsiders towards a rationalised degree of streamlining. Fred Patey's winning model is an object lesson to the would-be duration winner in its nice blend of the Stubbs' tradition with the full streamlining developed by such stalwarts as Len Stott and Norman Lees. Examples of nearly every published duration design are on display and offer a fine range of types for the attention of enthusiasts. In judging such models, of course, it must be assumed that—except for

COMPETITION

COMPETITION No. 2.—NON-FLYING MODELS

CLASS A.

1. A. B. Wyborn, 35, Birley Road, Whetstone, N.20—1/144 scale Dornier 217 E.5.
2. G. C. Parry, 62, Chandos Avenue, Whetstone, N.20.—1/288 scale Lancaster.
3. K. J. Miller, 8, Hurst View Road, S. Croydon, Surrey.—Firefly I.

CLASS B.

1. D. S. Larner, 184, Hampton Road, Twickenham, Middlesex.—"Shooting Star."
2. C. B. Maycock, 16, Linkway, Barnet, Herts.—1903 Wright Biplane.
3. G. C. Parry, 60, Chandos Avenue, Whetstone, N.20.—Spiteful XIV.

CLASS C.

1. R. Stevens, 38, St. Johns Road, Slough, Bucks.—Liberator B 24.
2. D. Ixer-Pitfield, 8, Drayton Ways, Kenton, Middlesex.—Short 200.
3. David Wall, Rock House, Hartoft, Pickering, Yorks.—Nakajima "Oscar III."

CLASS D.

1. K. A. Vicars, 44, Bedford Road, Reading, Berks.—Hawker "Hind."
2. D. D. Yeabsley, 40, Elmhurst Court, Croydon.—Cut-away Flying Bomb.
3. Frank Eaton, 151, Princes Gardens, West Acton, W.3.—Junkers Ju. 87 B.

CLASS E.

1. M. D. Steele-Morgan, St. Elmo, Goat Street, Haverfordwest, Pemb.—Mosquito.
2. R. W. Bayley, 72, Queen Anne's Grove, Bush Hill Park, Enfield, Mddsex. 1/36 scale Mustang.
3. N. Guthrie, 22, Thomson Street, Kilmarnock, Ayrshire.—De Havilland 86.

COMPETITION No. 3.—DURATION MODELS

CLASS A.

1. Fred H. Patey, 57, Manor Farm Road, Bitterne Park, Southampton. Semi-streamlined competition model.
2. W. R. Whitmore, 22, Holden Road, Finchley, N.12.—Streamlined competition model.
3. A. Cranmer, 139, The Broadway, Cricklewood, N.W.2.—Competition model.

CLASS B.

1. J. G. Hearn, 150, Mallinson Road, Clapham Common, S.W.11.—Streamlined competition model.
2. D. Attwood, 13, Alexandria Street, Eastwood, Notts.—Competition model.
3. A. G. Glennie, 152B, Trinity Road, Upper Tooting, S.W.17.—30-in. Wingspan Contest Model.

COMPETITION No. 4.—FLYING SCALE MODELS

CLASS A.

1. D. H. Elmes, 13, Quebec Road, Ilford, Essex.—Miniature Ryan P.T. 16.
2. G. Cudmore, 15, Elmsleigh Road, Twickenham.—½-in. Scale Hamilcar.
3. F/O. R. O'B. Van Cuylenburg, c/o Victoria League Colonial Bureau, 7, St. Martin's Place, Trafalgar Square, S.W.1.—Tempest VF.

CLASS B.

1. G. N. Thayne, 49, Battenburg Avenue, North End, Portsmouth.—Auster IV.
2. R. L. Jeffrey, 188, Bravington Road, Paddington, W.9.—Rata 16 B.
3. E. T. R. Polhill, 93, Bolingbroke Grove, Battersea, S.W.11.—Blériot Monoplane.

CLASS C.

1. H. C. Baines, 55, Gellatly Road, New Cross, S.E.14.—Uncovered Leopard Moth.
2. C. E. Martyn, 53, Cotswood Road, Durrington, Worthing, Sussex.—Scale Model.
3. J. L. Massey, The Cliffs, Burton Road, Finden, Derby.—Lysander.

CLASS D.

1. A. Lincoln, 220, Farleigh Road, Warlingham, Surrey.—Westland Lysander.
2. 393 Finchley Squadron, H.Q., Central Command, A.T.C. Charlbury, Chorleywood Road, Rickmansworth—Spitfire.
3. R. O. Venner, 5, Strathmore Drive, Dunfermline, Fife.—Whippet.

SPECIAL

£5. R. E. Buswell, 444, Wokingham Road, Earley, Reading—OHV Aero Engine.

£3. K. J. Barham, 25, Bylins Gardens, Monks Park, Wembley—Twin-cylinder Aero Engine.

£3. P. Smith—Sailplane "Apocalypse."

£3. Dr. J. F. P. Forster, The Laurels, Porlock, Somerset—Petrol-engined Flying-boat "Neptune."

£3. G. W. Gregory, Uppingham, Rutland—Demonstration Wind Tunnel.

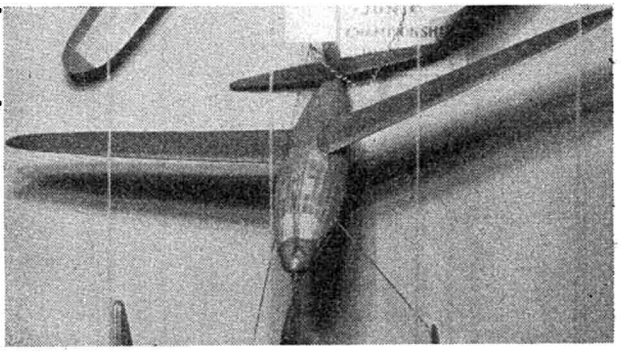
£2. N. K. Walker, 9, Alexandra Road, Farnborough, Hants.—Wind Tunnel Balance.

£2. D. Jackson—Petrol-engined Model Aircraft "Vulcan."

£2. P. E. Norman, 4, Sanderstead Road, Banstead—Collection of four Petrol-engined Models—the "Nats" family.

JUNIOR CHAMPIONSHIP WINNER

G. Hearn, Clapham Common.—Shoulder Wing Duration Model.



PRIZEWINNERS

COMPETITION No. 5.—MODEL SEAPLANES

CLASS A.

1. **P. O. W. Robinson, 186, The Rye, East Dulwich, S.E.22.—"Diasphere."**
2. **A. V. W. Cranmer, 139, The Broadway, Cricklewood, N.W.2.—Model Seaplane.**
3. **No Award.**

CLASS B.

1. **K. R. Gray, 13, Monument Road, Weybridge, Surrey.—Model Seaplane.**
2. **R. Field, 76, Lower Paddock Road, Oxhey, Watford.—Model Seaplane.**
3. **John Bruce, 30, Littleton Crescent, Harrow, Mddsx.—Model Seaplane.**

COMPETITION No. 6.—MODEL FLYING BOATS.

CLASS A.

1. **H. E. White, The Woodlands, Southgate, N.14.—Twin-engined streamlined free lance Flying boat "Dryad."**
2. **E. W. Jackson, 13, Nowell Place, Harehills, Leeds, 9.—Tandem airscrew free lance Flying boat.**
3. **R. Randall, 87, Wyken Way, Stoke Heath, Coventry.—Seagull Mk. IB.**

CLASS B.

1. **B. Richardson, 16a, Hastings Road, Southend-on-Sea.—Flying boat.**
2. **P. W. Cable, 6a, Clockhouse Parade, Palmers Green, N.13.—Flying boat.**
3. **M. R. Dale, 96, Crawford Road, Hatfield, Herts.—Flying boat.**

COMPETITION No. 7.—MODEL SAILPLANES

CLASS A.

1. **G. E. Dunmore, 22, Kingsway Road, Leicester.—Free lance sailplane and Kirby Cadet.**
2. **W. S. Saunders, 62, Leam Terrace, Leamington Spa—Contest sailplane.**
3. **F. E. Deudney, 34, Bressey Grove, S. Woodford, E.18.—Contest Sailplane.**

CLASS B.

1. **D. M. Cook, 43a, New North Road, Barkingside, Ilford, Essex.—Contest Sailplane.**
2. **J. F. Bones, 66, Park Road, Faversham, Kent.—Contest Sailplane.**
3. **Donald Fash, 22, Homeleigh Road, Nunhead, S.E.15.—Contest Sailplane.**

COMPETITION No. 8.—FREE LANCE PETROL MODELS

1. **J. E. S. Colyer, 35, St. Floras Road, Littlehampton, Sussex.—Twin engine free lance design.**
2. **Royce Collins, 173, Dames Road, Forest Gate, E.7.—Streamlined competition design mono-wheel retracting undercarriage.**
3. **D. H. Elmes, 13, Quebec Road, Ilford, Essex.—Free lance design with designer's own engine.**

COMPETITION No. 9.—FLYING OR SEMI-SCALE PETROL-DRIVEN MODELS

1. **B. C. Gunter, 10, School Road Avenue, Hampton Hill, Mddsx.—Westland Lysander.**
2. **G. D. Pike, 22, Arlington Drive, Mapperley Park, Nottingham.—Semi-scale Flying boat, nacelle drive.**
3. **A. V. W. Cranmer, 138, The Broadway, Cricklewood, N.W.2.—Westland Lysander.**

COMPETITION No. 10.—GENERAL AND EXPERIMENTAL

CLASS A.

1. **F. Hughes, 19, The Avenue, Bedford Park, W.4.—Canard pusher with "Stability Gremlin" experimental airscrew.**
2. **G. Cudmore, 15, Elmsleigh Road, Twickenham.—Tailless Glider.**
3. **A. A. Newick, 34, Kingsmere Park, Kingsbury, N.W.9.—R.T.P. low wing speed model.**

CLASS B.

1. **D. W. Avery, 11, Birchwood Avenue, Muswell Hill, N.10.—Tandem Monoplane.**
2. **M. J. Gilbert, 6, Dirhame Avenue, Heston, Middlesex.—**
3. **D. G. T. Reece, 47, Alderney Road, Mile End, E.1.—Miniature speed model.**

AWARDS

£2. F/Lt. H. J. Briddle, 102, Orford Road, Walthamstow, E.17—H.B.I Freelance Solid Prototype.

£1. W. T. Clark (A.T.C.), 92, Doncaster Road, Doncaster—"Lancaster" Solid.

£1. G. Berry (A.T.C.), 3, Berry's Cottages, Chertsey Road, Byfleet, Surrey—"Halifax" Solid.

£1. F/Lt.—— (A.T.C.)—"Focke Wulfe 200" Solid in Dural.

£1. R. H. Lunney, 243, Hale End Road, Woodford Green, Essex—Freelance design Flying-boat.

£1. N. F. Stringer, 146, Tideswell Road, Gt. Barr, Birmingham—WAD 20 Duration Model.

(The above additional prize list totalling £30 was presented by Mr. D. A. Russell and awarded by the panel of judges to models not coming within the specified classes and to others in appropriate classes which were deserving of special mention.)

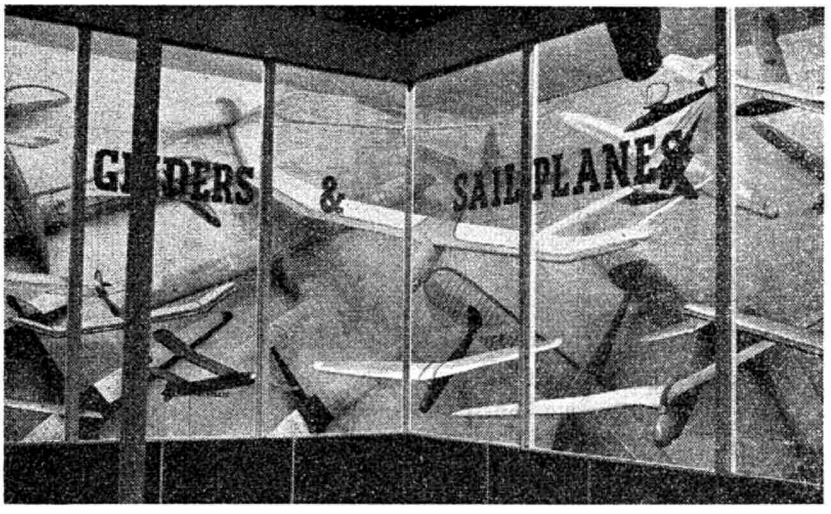
glaring aerodynamic faults—all entries are air-worthy, but it cannot but be remarked that a flying contest between the models on show would present a novel and interesting summer reunion if it could be arranged. (*We shall be pleased to hear from readers who would be interested in such an event.—Editor.*)

High above hang models of larger size—petrol-engined, gliders, and flying-boats. Many will be interested in the variety of tail-less types on show, including R. Connor's Handley Page contest winner, and in later developments to the same formula. Others include a prototype spaceship and well finished modification of Gosling's former tail-less record holder. By the entrance hall may be seen another ambitious project—an 8 ft. Westland Whirlwind modified to take twin jet-units. The builder, Donald Strachan—an actor who is playing in "The Sacred Flame"—is hoping to get these made up for him by a friend and anticipates they will weigh only 7 ozs. each.

The fine display of flying-boats this year is indicative of a revival of popularity for this type—aided perhaps by Dr. Forster and Mr. White's articles in the AEROMODELLER. While representatives of tried favourites, such as H. S. Sayers' G.B.2 and the Gyford Gull, are in evidence, most designs are mainly free-lance. H. E. White maintains his undoubted supremacy in the rubber-driven field with his winning "Dryad"—plans of which appear in this issue. Another that merits close inspection is E. W. Jackson's miniature with tandem airscrews worked from the nacelle by Moore-drive to rubber motors the full length of the hull. Nor must Mr. G. D. Pike's elegant petrol-engined model be ignored. The smooth fairing of the motor nacelle and its detailed finish make it a worthy prize winner.

Passing by the successive display cases, visitors are next confronted with the huge panorama of Eaton Bray Model Sportsdrome. Laid out to scale with buildings, visitors, cars and competitors it can be seen that even with crowds enjoying some five or six separate contests there is still room for more on its capacious 76 acres.

Following the aero-arrow necessary to regulate the huge attendance, and so to Petrol Corner! Bearing in mind the much bemoaned shortage of petrol engines the display was simply astounding. Here may be seen nearly fifty of the finest models in the country. In pale blue and cream, J. E. S. Colyer's twin-engined winner sets a standard that is closely followed by a dozen or more entries. This model, based apparently on the Airspeed Oxford, is an ambitious undertaking of semi-scale appearance. Detail has been carefully worked out—there is a stout undercarriage and beautifully finished Electron airscrews. It is hoped that this winner may be seen in flight during the next few months. Royce



A section of "Sailplane Corner." It was interesting to note that sailplanes generally have attained a far higher standard than other types during the past year.

Collins' model—a close runner-up—is in general lines an advanced duration type, with retracting monowheel undercarriage, fully enclosed engine and faired in wings. The main problem will be to keep it in sight rather than get it airborne. D. H. Elmes offers another delightful model with his semi-scale entry. Here again fine finish and attention to detail places him amongst the prize winners. That well-known designer "Natsnees" Norman presents a whole family of "Nats"—including "Natswiskas," "Natsbyte" and "Natspants"—a series of four models varying from 27 ins. to 36 ins. in wing span. A truly delightful crowd of little ones to take out for the week-end. The popular Lysander was present in force, no less than three versions being shown in this class.

The engine cabinet makes an instant appeal with its array of special exhibits. A highly commended award goes to R. E. Buswell for his brilliant O.H.V. engine. This entrant is only eighteen years of age, and is one that much can be expected of in the future. Another special award goes to K. J. Barham for his twin-cylinder aero-engine that strikes a novel note. As may be expected, N. K. Walker, of L.S.A.R.A. fame, is represented by a wind tunnel balance that looks very efficient and will no doubt serve to provide yet more interesting papers on low-speed aerodynamics. But the visitor will be particularly attracted by the display of compression ignition "Diesel" engines displayed by the Aeromodeller Research Department. These have formed the basis for experiments over the past two years, findings of which have recently been made public for the first time. Like all true scientific research this is being freely offered to the public in the hope that by so doing more will result for the good of the cause than by secrecy. Already many experimenters have come forward with their experiences, and by mutual co-operation the perfect Diesel formula should be swiftly developed.

Stepping across to the gallery the marvel of the Exhibition is on display. F./Lt. Tucker introduces the public to the twin-engined Vickers' Viking taking off from its perspex landing strip and flying under remote control. Weighing 2½ lb., this 40-in. scale model is operated from the control panel. Its twin four-bladed airscrews tick over, with the full-scale effect of running backwards until the throttle opens up. Once round the runway and the tail is up, steadily the revs. increase and this unique model is airborne. Turning now at nearly 3,000 revs. per minute the twin airscrews take the Viking around at over 25 m.p.h. Slowly the landing wheels and undercarriage fold into the nacelles. A red light glows on the control panel as the machine noses down, and a warning horn sounds to indicate that the undercarriage is still up: the red light changes to green as it drops again, and the Viking comes in to a perfect three-point landing. *[To be continued.*

Next month; in the second part of this description, photographs will be published of most of the winning models.

For those who would like a souvenir there is a 24-page Exhibition Guide containing details of all the exhibitors. The guide is fully illustrated including delightful sketches by Ramond Malmstrom, is bound in stiff covers and may be obtained from our Leicester offices. Price 1/- post free.

Below, an informal gathering by the flying scale models, consisting of Admiral and Lady Boyd, left and right, with Mr. and Mrs. D. A. Russell.

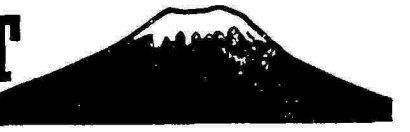
Vice-Admiral Sir Algernon V. Willis, K.C.B., D.S.O., flies the Vickers Viking by remote control assisted by F/Lt. Tucker, of the "Aeromodeller" Research Staff. Standing is F/Lt. Taradge, of R.A.F., Farnborough.

£100 MUST BE WON CASH PRIZES

for identifying

FIRST PRIZE	£50
SECOND PRIZE	£30
THIRD PRIZE	£15
FOURTH PRIZE	£5

JAP AIRCRAFT



Hirohito's hosts have been driven from the skies by Allied air power but much still remains to be learned of this once formidable armada. Research at Farnborough has yielded valuable data on German machines—perhaps still more can be gained by a knowledge of Japanese developments. Time alone will reveal the secrets of these little yellow devils whose deadly Zero (Zeke) was one of the outstanding surprises of the war.

Study 100 unusual views (some aircraft appear more than once) in this fascinating contest and incidentally win a share of the magnificent prize money—£100 must be won—in other words £1 for each view correctly identified !

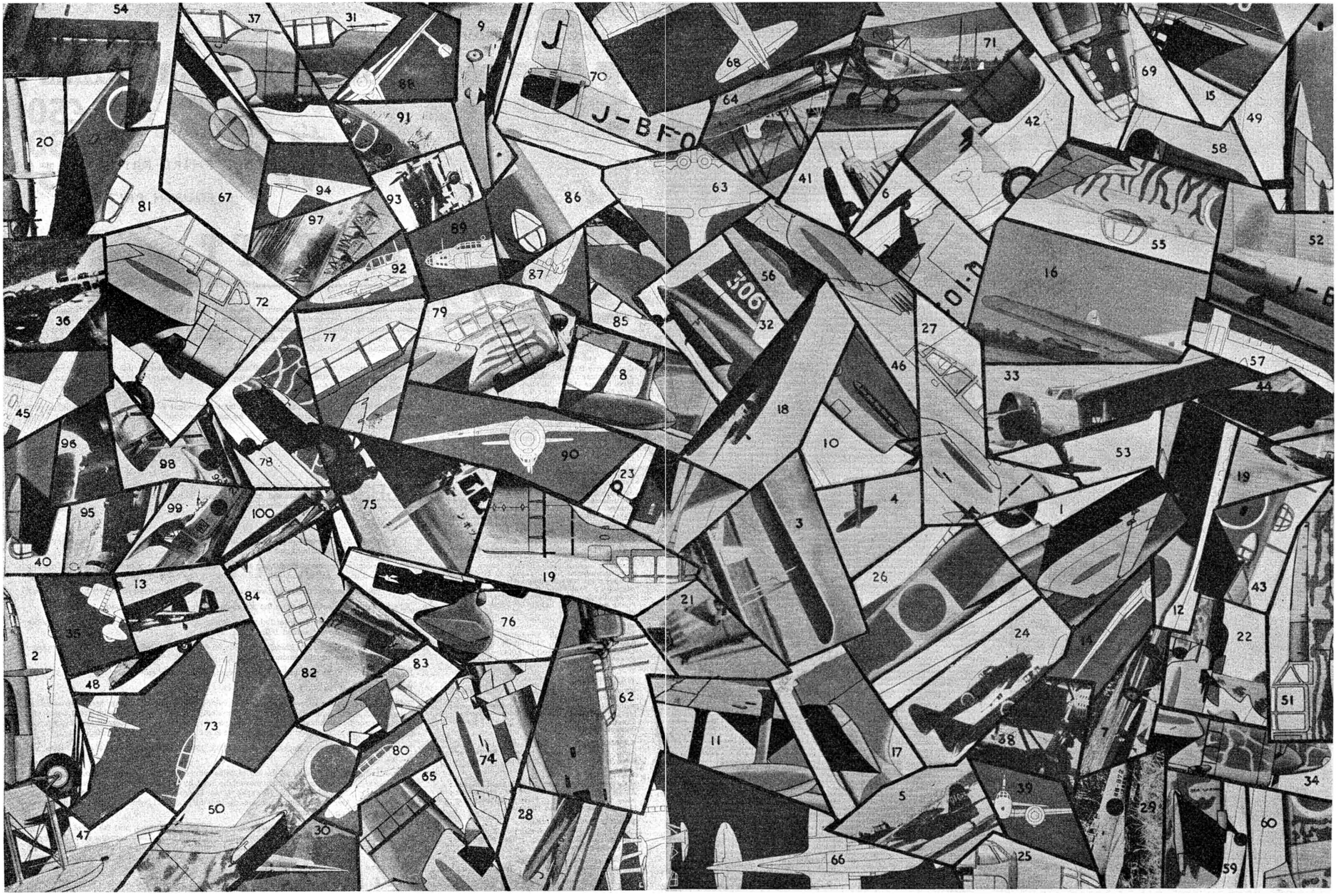
Each of the identification problems is taken from " Japanese Aircraft " by John Stroud (price 28 shillings or 28 shillings post free) published by the Harborough Publishing Company, Ltd., Allen House, Newarke Street, Leicester.

CONTENTS

of " Japanese Aircraft "

RULES

1. This competition is open to all readers of the " Aeromodeller," and is organised by the Model Aeronautical Press, Ltd., Allen House, Newarke Street, Leicester.
2. There is no entry fee.
3. Employees of the Harborough Publishing Co., Ltd., the Model Aeronautical Press and associated companies are not eligible to compete.
4. The competition consists of identifying aircraft from the portions of photographs and drawings reproduced on pages 170 and 171.
5. These photographs and drawings have been taken from " Japanese Aircraft " by John Stroud.
6. Aircraft have been selected from the schedule which appears on this page.
7. The first prize of £50 will be awarded to the entrant who identifies correctly the largest number of views out of the represented 100.
8. Should two or more entrants identify correctly all the views the whole of the £100 prize money will be distributed equally amongst them.
9. No photograph or drawing has been retouched or altered in any way.
10. Entrants must use the entry form on page 211.
11. Entry forms must be enclosed in a sealed envelope bearing a 2½d. stamp and addressed to " Jap Identification Competition," The " Aeromodeller," Allen House, Newarke Street, Leicester. Envelopes received without appropriate stamps thereon will not be accepted and entry forms incorrectly filled in, mutilated or not completed in ink or typewritten will be disqualified.
12. The closing date for this competition is April 5th, 1946. Entries received after this date will not be opened.
13. If an entrant, after publication of the list of prize-winners in the " Aeromodeller," considers that he has a claim to a prize or portion thereof, he must, by registered post, notify the Harborough Publishing Co., Ltd., Allen House, Newarke Street, Leicester, within ten days of the publication of the results. Any claim must be accompanied by the sum of £1, which will be refunded in the event of the claim being allowed.
14. No correspondence can be entered into with regard to the competition, and the act of submitting a set of entry forms by a reader will be construed as an unqualified acceptance of the above stated rules, and an acknowledgment that in the event of any point arising which is not covered by them the decision of the directors of the Harborough Publishing Co., Ltd., will be unreservedly accepted as final and legally binding.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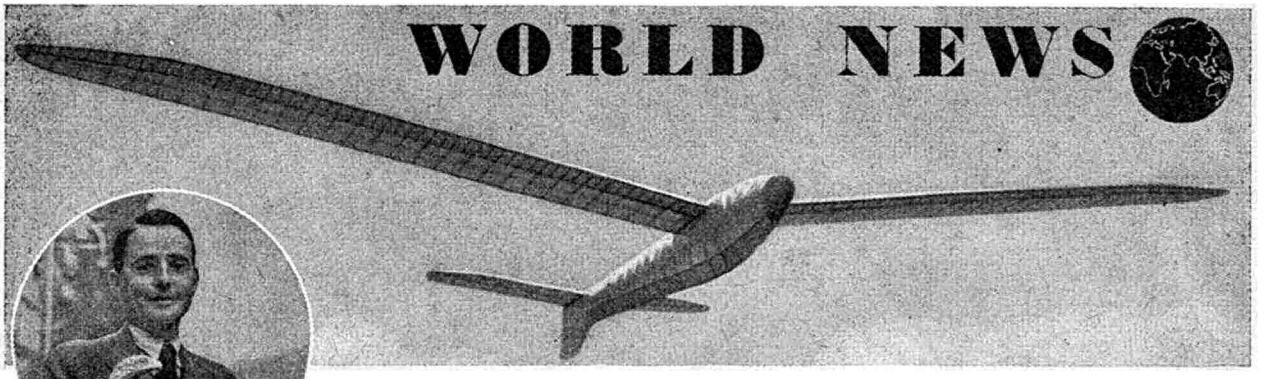
WORLD NEWS

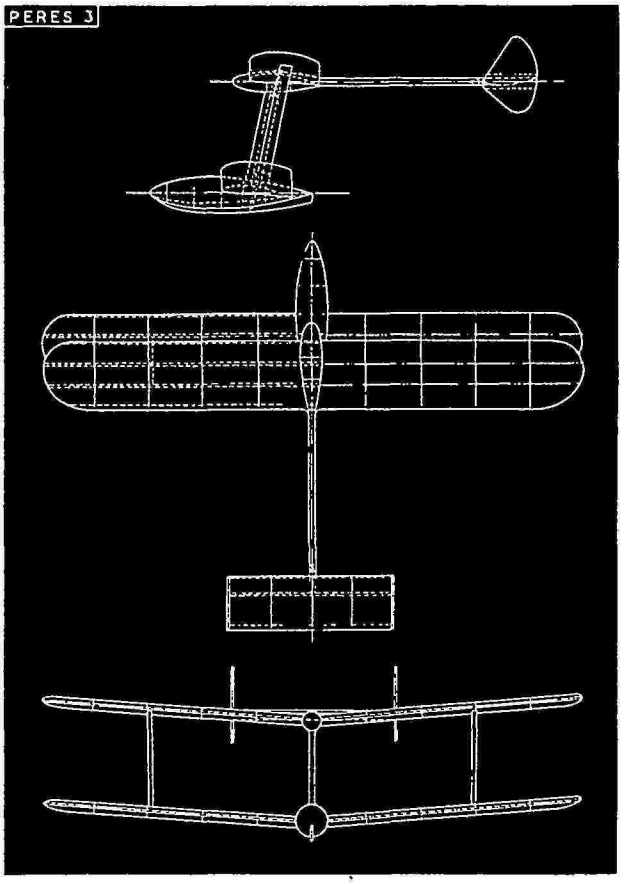


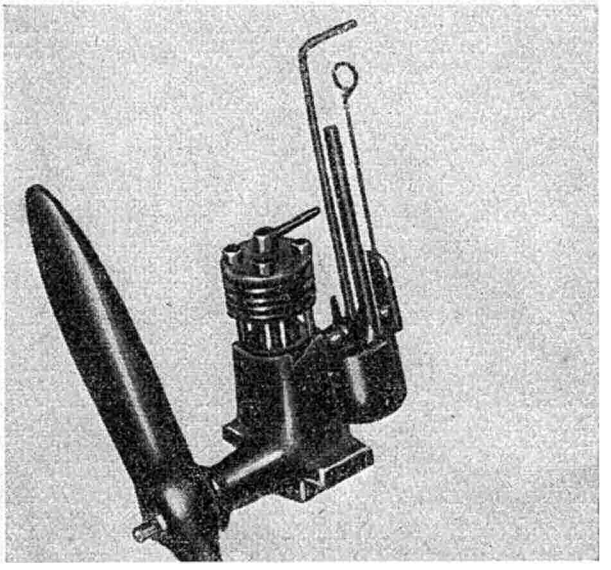
Switzerland—World Record.

A new world record was established when G.41, the sailplane above, flew for 2 hours 21 minutes, o.o.s. Designed by Emil Glunkin (inset), it was built and flown by Trangott Haslach. G.41 is the first Swiss machine to hold the record.

France—'Mazing Model.

One of the most amazing power units yet produced, the diesel engine portrayed in the accompanying illustration is too small to power a Wakefield model. With a capacity of 0·16 c.c., and a stroke of 8 m.m., the overall weight is approximately ½ oz.





Palestine—Unorthodoxy.

A refreshing change from the stereotyped, this model is one of a series constructed by students at the Tel Aviv Aeromodelling Centre, during their course. Of hardwood construction, it was designed by Dr. Fidia J. Piattelli, Director of the Centre, and is reputed to have a very fine performance.

U.S.A.—Production and Development.

American firms are getting down to production, and one of the results is that American modellers had the choice of some 36 different petrol engines this last Christmas. Kits are profuse, whilst one is entreated on every hand to select accessories from an apparently unlimited stock.

An interesting engine just being put into production is the " Howler," a class " C " type by the engine division of the Bone Tool and Gauge Co. Its main feature is a direct injection fuel system which obviates the need for a carburettor (following latest aero-engine practice).

Monaco.

The small state of Monaco promotes many activities besides that of gambling in the Casino at Monte Carlo. For instance a model seaplane competition, with a challenge cup presented by the Municipality of Monaco, was started in 1941 and carried on throughout the war. R. Auberin, of the Monaco Air Club was the 1945 winner.

CIVIL AIRCRAFT No. 27

THE CHILTON D.W.1. MONOPLANE

BY E. J. RIDING

IN comparison with the English Electric Co.'s "Wren," described in last month's issue, I am dealing this month with a machine belonging to the same ultra light category but of a period some fifteen years later.

Readers can see for themselves how much progress had been made in design during those years by comparing the two specifications.

The Chilton monoplane was designed and built by two ex-D.H. Aircraft Technical School students—Messrs. A. W. Dalrymple and A. R. Ward—during 1936-37. Chilton Aircraft, as their firm was called, then proceeded to put the machine into production at Hungerford and also to produce the 4-cylinder in-line water-cooled Carden Ford aero engine—a standard Ford 10 engine adapted for aeroplane work.

The prototype D.W.1, G-AESZ, was painted red with aluminium wings and tail surfaces and it attended many aviation meetings from the time it was built until the outbreak of war. It caused much comment on account of its fine handling qualities and "fighter-like" performance.

Two other D.W.1's, G-AFGH and G-AFGI, were built in 1938, 'GH appearing at the R.Ae.S. Garden Party at Heathrow doped in a pale blue and aluminium colour scheme. In April, 1939, the first D.W.1.A G-AFSV, appeared equipped with a 44 h.p. inverted in-line air-cooled Train 4.T.—a slightly lighter and more powerful engine than the Carden Ford. This was to have been the standard production model had not the war intervened. Painted black with white letters, 'SV achieved a notable success by winning the Folkestone Aero Trophy. All four D.W.1's as well as a D.W.2, G-AFSW, are still on the civil register.

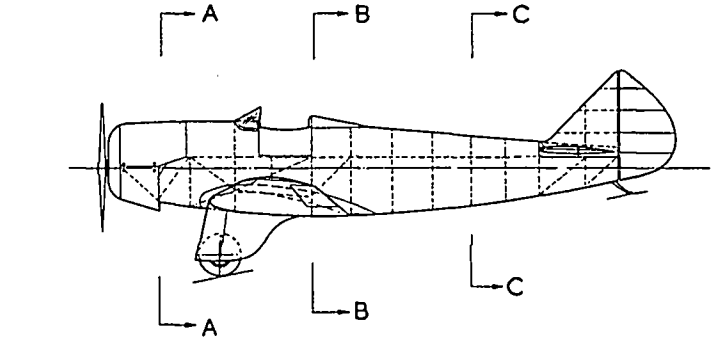
Construction.

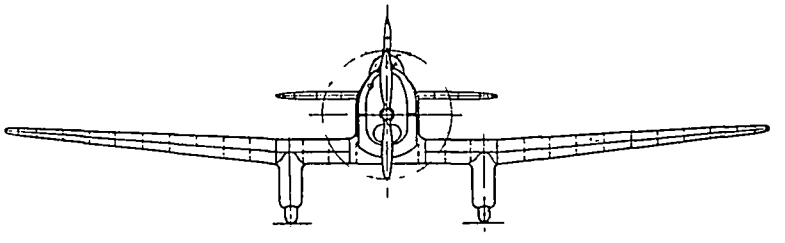
Fuselage: Semi-monocoque built up from spruce longerons and cross members covered with plywood. Cantilever wing built in three pieces (centre section containing the undercarriage and the two outer wing panels). Two spruce and plywood box spars carried normal pattern spruce and ply-webbed ribs. Plywood covering aft to rear spar, remainder including ailerons fabric covered. Manually operated split flaps extending over 50 per cent. of wing. Fixed cantilever tailplane and fin; fabric-covered elevators and rudder. Fuel: eight gallons in fuselage tank.

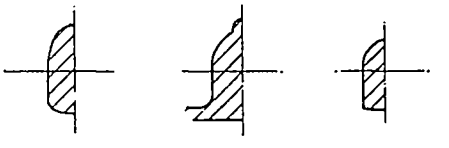
Cantilever undercarriage units completely enclosed in streamlined "trousers" of which the front half was detachable for inspection and maintenance.

Photos by E. J. Riding.

Specification: 32 *h.p. Carden Ford:* Span, 24 ft. 0 in.; length, 18 ft. 0 in.; wing area, 77 sq. ft.; weight empty, 398 lb.; weight loaded, 640 lb.; speed, max., 112 m.p.h.; cruising, 100 m.p.h.; landing, 35 m.p.h.; range, 500 miles (60 m.p. gallon). Price, £315. 44 *h.p. Train 4.T.:* Span, 24 ft. 0 in.; length, 18 ft. 0 in.; wing area, 77 sq. ft.; weight empty, 380 lb.; weight loaded, 650 lb.; speed, max., 135 m.p.h. cruising, 115 m.p.h.; landing, 35 m.p.h.; range 400 miles. Price, £375.







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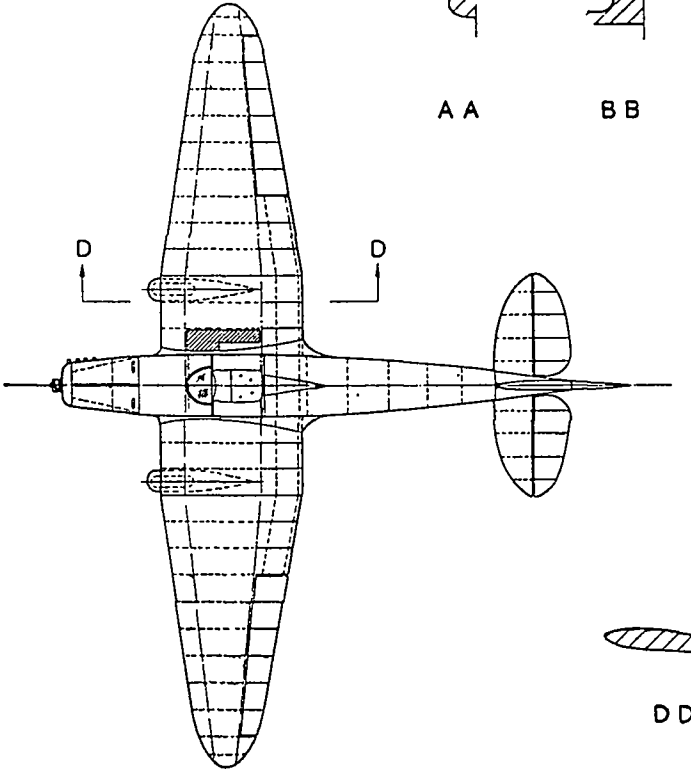


D D

A.T.P. Photo.

THIS model, portrayed on the front cover this month by C. Rupert Moore, is a fairly advanced design both from the technical and practical point of view. It is not a simple structure, either to describe or to build, but a job that should provide a fairly skilled and experienced aeromodeller with something to get his teeth into during the close season for model flying.

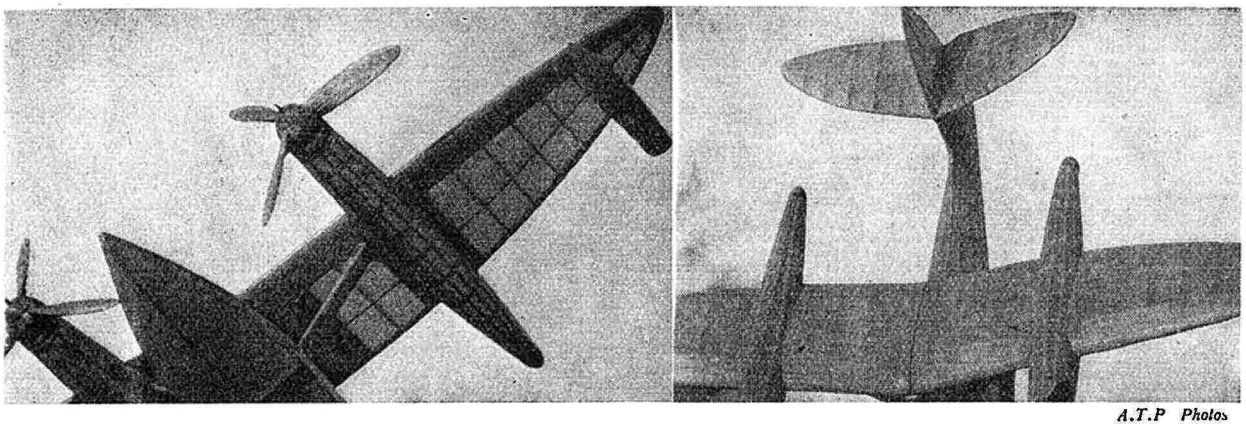
It was decided above all to attempt to design a model flying boat of " semi-scale " appearance, with an airframe which was practical from every model-aerodynamic and structural point of view. The model must be capable of being trimmed and able to withstand the rough treatment which flying models usually experience during trials, and yet it must look as much as possible like a real flying boat without being an actual copy of any existing full-sized machine, because this would seriously limit its flying capabilities.

After some experiments with various types, the " Catalina " type was decided upon, involving a low hull with good lines, the main plane supported on a central streamlined pylon with bracing struts. The twin motors are carried outboard on the wings and the tail-plane is mounted high up on the fin. The nacelles carrying the motors are built into the wings and not suspended below them. Three-bladed propellers are used in order to reduce the height of the wings as far as possible, without sacrificing the advantage of using large airscrews with rubber motors.

The Hull. Begin as if you were making a simple slab-sided fuselage, building up the two sides, one on top of the other, on the drawing board. Now make up the two " basic " formers and cement them in position with the two sides. Make sure the alignment is correct by resting the assembly upside-down on a flat board.

Next, insert the cross-pieces in the top of the hull and carefully join the sides at bow and stern. Now turn the hull upside down again and insert the forward keel and the central stringer aft of the step. At the various " former " positions, build in the pairs of struts forming the triangular keel supports both fore and aft of the steps, finally completing each " former " by cementing in place the two halves of each bottom strut. This part of the assembly needs great care and continual watch must be kept to see that the lines and symmetry of the hull are kept perfect. Now cut out the stringer-formers which support the side and deck stringers, and cement them in place. Follow up with the stringers, still keeping careful watch on the general alignment, and firmly cement the rails in place which support the bracing struts. If this somewhat tedious job is done carefully it is possible to make a very strong and rigid hull frame. Build up the struts, formers, etc., which make up the central pylon, and build in the details of the tail emplacement. We are now ready for the " sheet-work." Most of the sheet used in this model has been salvaged from superannuated pre-war models, and is about ·025 in. thick. The larger pieces, however, were produced by carefully sanding 1/16 in. soft sheet until the required thickness was attained. Cut paper patterns of the two pieces for the forward hull-bottom by " offering up " stiff paper to the hull, marking out with pencil, and cutting out, making a final careful test to see that the patterns fit exactly *at the keel* Overlapping a little at the outer edge will not matter as this can be trimmed off. Cover the portion of the hull aft of the step as shown, and then start on the pylon. The forward semi-circular section is easy to cover, and the after section, although it involves a compound curve, *can* be covered with two separate pieces only, one each side, if the grain is suitably chosen and warm fingers judiciously applied whilst the cement is setting.

Wings. Make tracings of the wings in the usual way, drawing in the position of the nacelles. Cut out the ribs and build up the basic wing-structures with the ribs and spars. Note that there is no leading-edge spar, and that the trailing edge may be built up, using $\frac{1}{8}$ by 1/32 in. strips. This is much better than using a bent V-section spar. Note also that rib No. 1 is placed at an angle to suit the dihedral, and that rib No 4a is only inserted temporarily, for reasons which will appear later. Cut a number of 1/16 in. and $\frac{1}{8}$ in. strips from 1/32 in. balsa sheet, and " plank in " the leading edges. The narrow strip will be used where the curve is most acute, but as soon as the sharp curves have been covered the remainder of the sheeting, which is carried back to the main spar, can be carried out with a single broad strip, if you have sufficient large pieces of sheet. The sheeting of the underside of the leading edge box cannot be completed yet as the wing *must not be removed from the board* until the nacelles are built in. The wing tips should be roughly carved, slightly oversize, from 5/16 in. balsa, and cemented into position, where they can be glass-papered to shape



A.T.P Photos

Motor Nacelles. It is better to leave the wings at this point and build up the four halves of the nacelles. These are very simple to build as they are semi-circular throughout. Cut out the semi-circular formers, erect them at the appropriate stations on the drawings (you will need four tracings—it's quicker than waiting for each assembly to "set") and fit the stringers. Use plenty of cement, as these nacelles are going to form part of the wing structure. When they are ready, remove them from the board; no deformation should take place.

Fitting the Nacelles. Now go back to the wings, and carefully cut out the portions of the leading and trailing edges outlined by the tracing of the nacelles. Remove also the portions of the wing spars, and the temporary rib (No. 4a) between ribs Nos. 4 and 5. The two portions of the wing will thus be completely separated, leaving a gap into which the top half of the nacelle can be fitted so that it lies flat on the board. It should now be obvious why the wing could not be removed from the board at this stage; cutting away the unwanted section must be done without causing any part of the wing structure to move out of line The longerons at the base of this half-nacelle should fit exactly so that they touch the cut ends of the main and rear lower wing spars, and the trailing edge. Put plenty of cement on these joints and place the half-nacelle in position. Now cut short pieces of hard 3/32 in. square "strengthener" spars, which will pass right through the tops of the nacelles and rest in the slots provided in the ribs Nos. 3, 4, 5 and 6. The forward strengthener actually forms part of the upper main spar. See that they fit properly *without strain* and cement them into position. Before removing the wings from the board, fit and cement all the 1/32 in. balsa sheet gussets to the nacelles, complete the sheeting on the top of the wings and fit the capping strips on ribs and spars. "Capping" the spars may be avoided if they have been left standing "proud" of the ribs by 1/32 in. as shown in the drawing.

Remove wings from the board and finish sheeting in the leading edges. Cement capping strips on the lower spars and ribs. Cement the lower halves of the motor nacelles in place, making a sound job of this so that the semi-circular formers are well and truly impregnated with cement at the joints. Cut the front and rear facing formers from 1/16 in. plywood and cement them in place

Wing Roots. The roots are completely sheeted in, but before doing this provision must be made for the rubber bands which hold the wings together. Channels are made by constructing a "rectangular tube" of balsa. As there are a number of these it is advisable to make them all up in a single length. Take two strips of 1/16 in. sheet ½ in. wide and cement two lengths of 3/32 in. square balsa between them to form a box section. Study the drawing and cut rectangular holes in rib No. 1 and the wing root rib in the correct positions. Now rest the wing on a flat board with No. 1 rib touching the board and the tip resting on a block of wood so that the correct dihedral angle is maintained. Build up the wing root, inserting the "boxes," cutting them off flush with the ribs. Remove the wing from the board when the cement has set and fit the extension boxes which slope downwards to the under surface of the wing. Complete the sheet work on the wing root.

Three jobs now remain—the emplacements for the tip-floats, the runners for the wing fixing, and the boxes for the bracing struts. These details can be followed quite easily from the drawings.

In all the work connected with the wings care must be taken at certain joints to make sure that water cannot enter if the model should make a bad landing when alighting on the water. This applies particularly where such details as rubber band channels emerge: plenty of flat surface must be provided to ensure a good joint with the paper covering.

Wing-tip Floats. Start with the keel and former, cement the sides in place, cut away the keel where necessary and cement a length of "channel" in position. Cover the upper and lower surfaces with 1/32 in. sheet, build up the strut or pylon, and fit the platform on top. This is made with two layers of 1/16 in. sheet, cemented together, with the two grains crossing each other at right angles, so that a "two-ply" platform results. Build it around the projecting channel, and allow plenty of overlap in size, as it is best to finish the platform to size by "offering it up" to the recess in the under-surface of the wing, after the projecting channel has been trimmed off. This will make sure that the float lines up fore and aft.

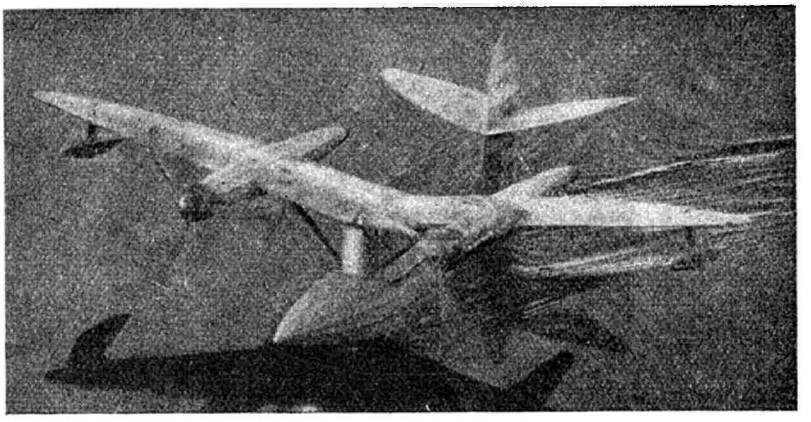
Bracing Struts. These are a simple job. Use hard balsa, and plenty of cement. It is advisable to make them ⅛ in. longer than shown in the drawing, so that they can be trimmed off at the upper end when the model is finally assembled in order to correct any slight inaccuracies in dihedral or alignment which are bound to arise. Do not forget the little block cemented to the underside of the wing against which the strut bears.

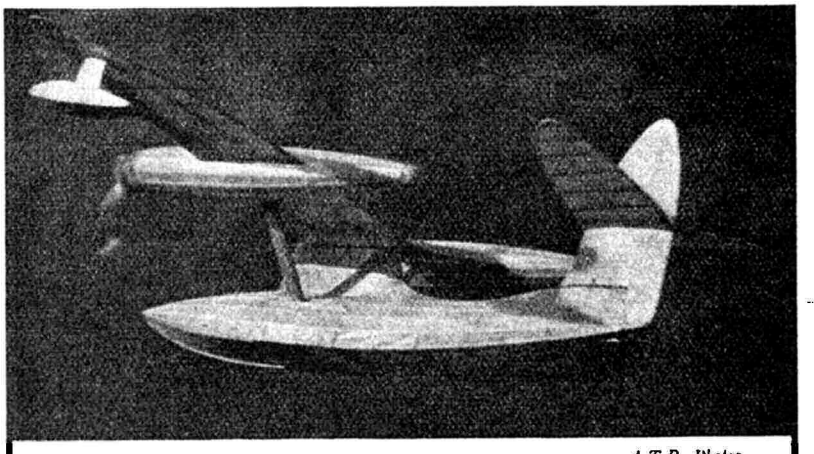
Tail Unit. Cut out the ribs for the fin, and with a steel rule and a razor blade, cut each longitudinally in two pieces, not exactly in the centre, but 3/64 in. off centre, to allow for the thickness of the leading and trailing edges. Trace the fin, and erect the wider

" half " of each rib at the correct station with a touch of cement, fitting the leading and trailing edges, tips and spars. Leave the lower ends of the rear spars and trailing edge oversize, and do not finish off this part yet. Detach from the board. Cement the remaining portions of the ribs in place, and add the spars. Now support the hull on blocks so that the pylon is vertical, and place the fin on its platform, holding it in place temporarily with pins, and fixing up a spar from the tip to some solid support to keep it steady whilst adjustments are made. See that the bottom rib rests snugly on the platform when the fin is vertical. If it does not, carefully break the spars away from their slots in this rib, and re-cement after making the necessary adjustment.

Now cut a piece of 3/32 in. sheet to fit in between the rear spars where they touch the after end of the hull. Cement this piece to the hull to form a spigot whilst the tail is still supported in its correct position: trim the rear spars to length and build in the lower stern curve to the fin. Now remove the fin and cement a piece of 1/16 in. sheet behind the rear spars where the spigot fits, and build up the " box " for the rubber band anchorage. Cement in the sheet balsa gussets as shown in the drawing. Make a tracing of the tail planes and build them up, using 3/32 in. square balsa for both edges and ribs. Cut out the upper ribs from 1/16 in. sheet to pattern and cement them on top of the 3/32 in. square cross spars, and fit the wing tips and spars. Glass-paper to a smooth finish, remove the planes from the board, add the short lower spar, and cement the stabilizers in position on the fin, being very careful to locate them accurately and check the dihedral angle. I used two identical pieces of 3/32 in. balsa, with pins stuck through them, to act as temporary struts from the tip of the fin to the tips of the stabilizers, thus making sure that the distances were exactly equal on both sides. Complete the job by cementing in the sheet work; the joints must be well fitted. Do this carefully; as the whole strength of the assembly depends upon good butt joints here. Cement the bamboo locating peg into the hull, and fit the tail unit, checking carefully for alignment.

Motor Nose-Pieces and Propellers. These were fully described in a previous article on " Three-Bladed Propellers." Each

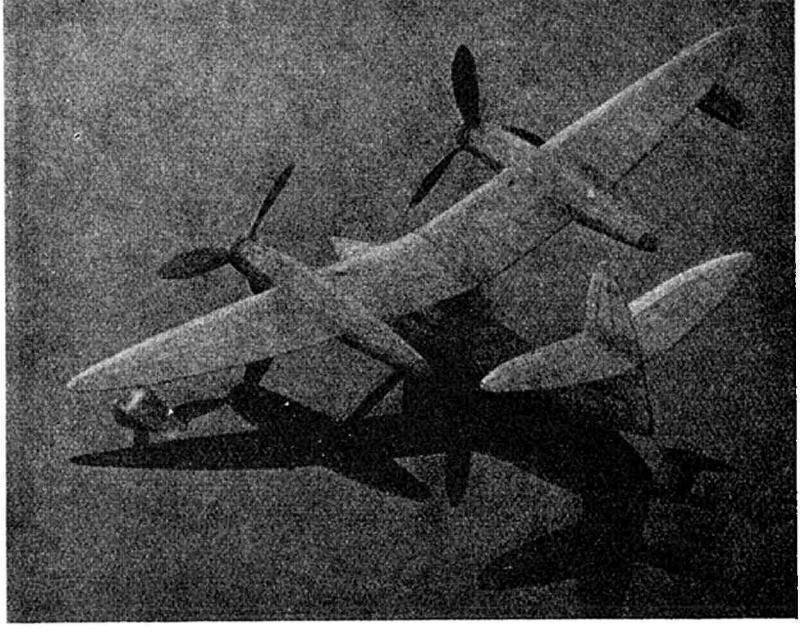


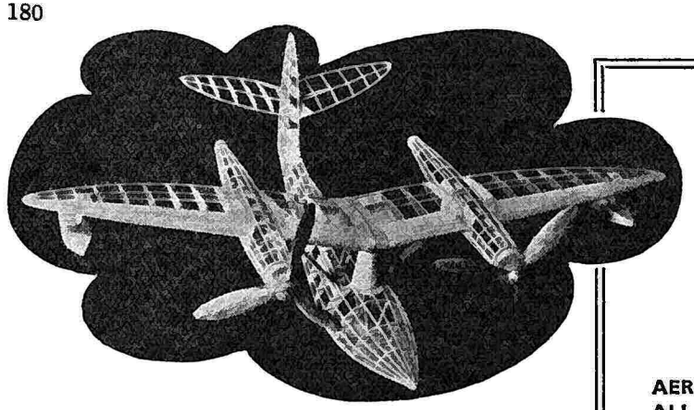


A.T.P. Photos

Photographs on the opposite page illustrate the characteristic pointed nose, built-in nacelles, and elliptical flying surfaces.

The top photograph shows the boat moving forwards for take off, whilst above is the model in flight. Below is the model at rest (yes, it is water, and not glass!) Note the tip floats serving their true purpose. They do not touch the water during take off.





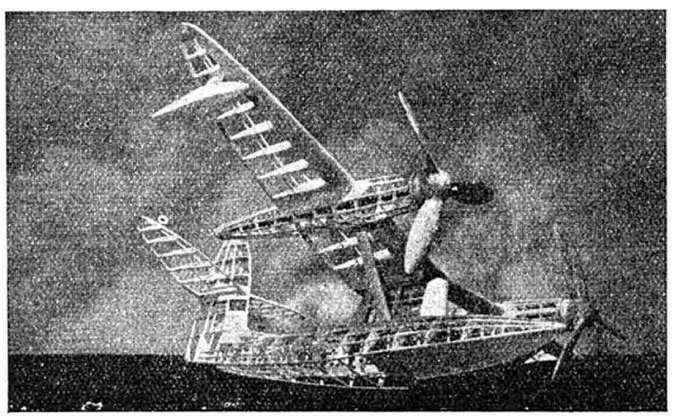
propeller is driven by 1 oz. rubber made up into a skein 22 ins. long, and pre-wound. According to published tables, this skein should take five or six hundred turns, but the rubber I have, although it has been very carefully preserved since 1940, breaks at about 250 turns! Be very careful, therefore, to test your rubber skeins before attempting to wind them inside the nacelles, a rubber "explosion" here would be very undesirable, to say the least. It is advisable to attach a thread loop to some part of one of the wing roots so that one propeller may be wound whilst the other is kept from turning by means of the loop. Both propellers can be held by the fingers of one hand before launching.

Covering. Before commencing the covering give every component a coat of banana oil, inside and outside. Should any water get inside the covering, serious damage might result if the balsa structure got wet. Furthermore, it is always advisable to dope *sheet* balsa before covering, if paste is being used, because the wet paste will cause warping if applied to the natural wood surface.

I used light tissue for the tail unit, and covered the rest of the model with heavy-weight bamboo tissue, since I had some left from a pre-war stock. This paper is ideal for flying boat or seaplane work as it absorbs the banana oil and forms a very tough skin. Of course, in the absence of this heavy-weight paper, other tissues may be used, but they must be such that the dope is *absorbed into the texture of the paper*, and does not just remain on the outer surface. Silk could be used, of course, particularly for the hull, but the modeller who can get silk can probably get bamboo tissue.

Covering is not an easy job. Start with the hull, cover the bottom, and then, using strips of paper, cover the curves of the sides and top, avoiding wrinkles. Remember that the joints *must be water-tight*; use a fair overlap and see that the paper is stuck well down everywhere. This advice applies to all the covering, for every component is liable to immersion. Next cover the wings and nacelles, tail unit, tipfloats and bracing struts.

A.T.P. Photos.



Now spray with water and dry off in the usual way to tighten the fabric, and dope everything with a generous coating of banana oil—the thick, undiluted grade. When this is thoroughly dry, give the whole structure a second coat, which should be sufficient. See that the banana oil is allowed to flow into all crevices, and into all the channels through which rubber bands are passed. *Everything must be waterproof.*

Assembly. Make up a hook of 20 s.w.g. steel wire as shown on the drawing. First assemble the wings. Poke the hook through one of the boxes from the wing-root rib; hang a rubber band on it, and withdraw the hook, bringing the band through the box. Put a peg of 1/16 in. square hard wood through the band at the outer end to stop it coming right through. Draw a second band through the other box in the same half-wing. Now take the other half-wing and insert the hook at the *outer* end of the box, on the underside of the wing, and draw the overhanging ends of the bands in the first half-wing through the boxes in the other, inserting two more pegs to secure the bands. The wing can now be fitted on its runners.

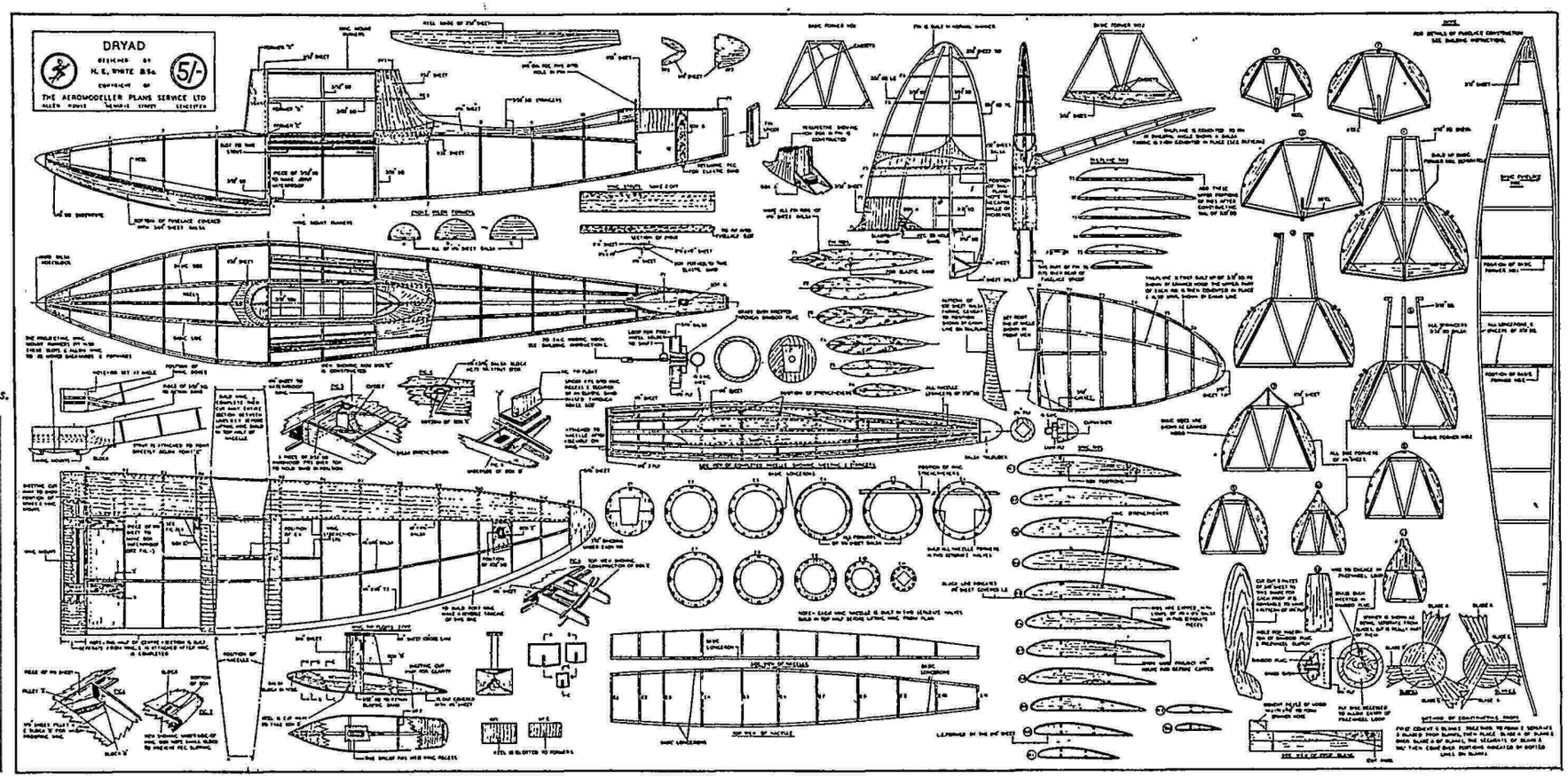
To attach the struts, put a rubber band through the starboard strut, starting from the top, and insert a peg to prevent it pulling through. This is done by passing the wire hook through the starboard strut, starting at the lower end, and drawing the rubber band through so that it hangs out at the lower end. Now pass the wire hook through the slots in the hull, starting on the *port* side, and draw the band through; this will draw the lower end of the starboard strut into position in its slot. Now take the port strut and poke the wire hook through it; withdraw the hook, drawing up the rubber band which is now hanging out of the port slot, and fasten it at the top of the strut with a peg.

It is now a simple matter to place the wings in position on the pylon runners, and, using the hook, draw the rubber bands through the boxes in the wings, inserting pegs on the upper side to hold the bands and support the wings.

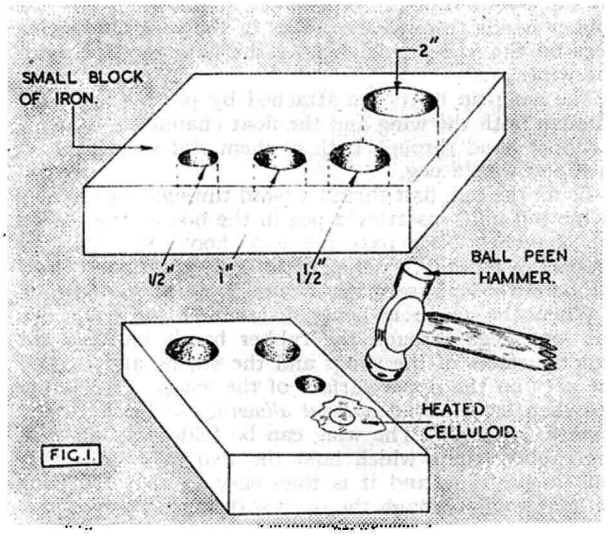
The wing-tip floats are attached by passing the hook through both the wing and the float channels: drawing a rubber band through both of them and securing it at each end with a peg.

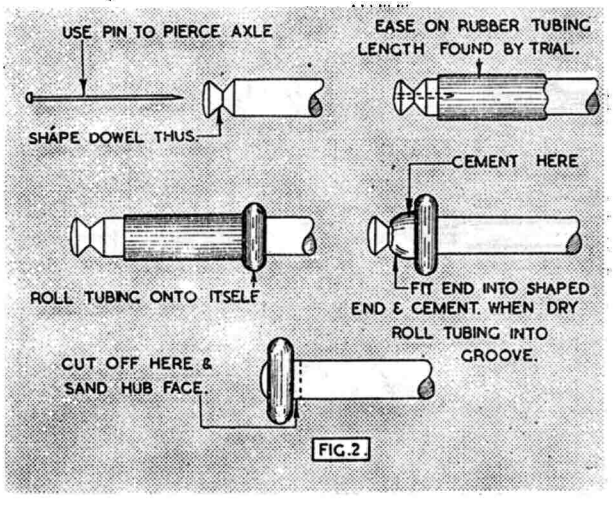
To fix the tail, first thread a band through the channel in the tail unit, inserting a peg in the box at the top on the channel. Now pass the wire hook through the channel in the hull, starting from underneath, and draw the band through, securing it with a peg at the bottom.

When the plane is being dismantled for transport, put long pegs through the rubber bands between the under surfaces of the wings and the struts, and remove the pegs on the upper surface of the wings. The wings can then be removed *without allowing the bands to slip through the struts.* The wing can be folded in half with the rubber bands which hold the two halves together still in position, and it is then easy to refit the wing without going through the process described above.



GADGET REVIEW By "Bonus"





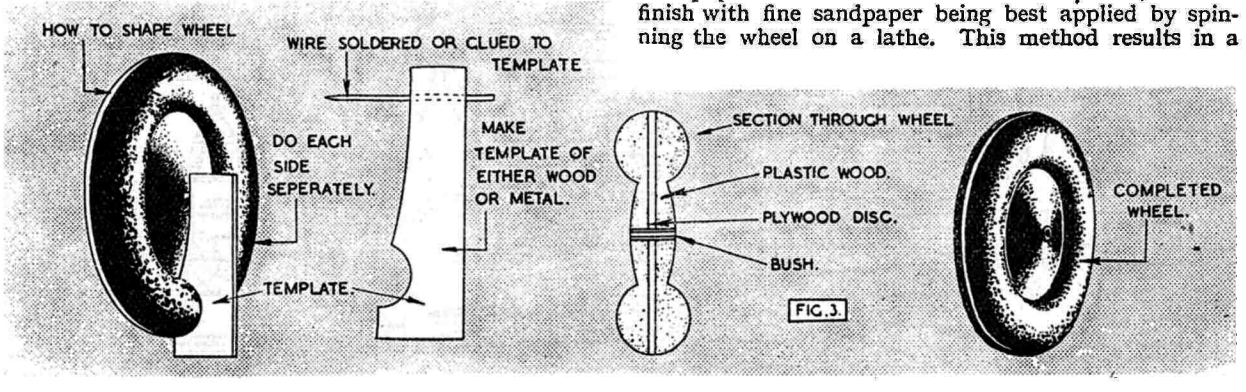
WHERE would the world be without a wheel? Anyway your Gadget Review this month offers you four different methods of making them—big wheels, small wheels, wheels as big as . . . but to work.

First, a novel method of making celluloid "streamline" type wheels from F. GEARING, of Sprotborough (Fig. 1.) A convenient material is old mud flaps or guards from a push bike, which are normally made from good quality thick white celluloid. A die must be made from a thick piece of steel or iron with holes of various diameters from half an inch to 2½ in. drilled through it. Obtain a ball-peen hammer, and, placing a piece of celluloid, which has previously been heated until it is plastic, over the hole of the required diameter, and press the peen of the hammer over the hole. The larger the peen of the hammer, the less the curvature of each wheel half, and the slimmer the finished wheel. Make two identical wheel halves and cement them together, when dry drilling the holes for the hub. For a slightly stronger wheel the hubs may be reinforced with an additional disc of celluloid cemented on the inside, and finally the hub may be bushed with metal or celluloid tubing.

Secondly, for the man who likes his solids to be realistic to the *nth* degree, here is a method from R. A. CHOWNS, of Prittlewell, Essex, for making rubber-tyred wheels. (Fig. 2.) The sketch is completely self explanatory.

The third method comes from D. T. DOWLING, of Bermondsey, and should prove a godsend to those flying fans whose undercarts are for ever coming to grief on the field through a splintered wheel. The method of construction is illustrated in Fig. 3.

First cut a wooden or metal template of one side of the wheel and fix a pin or a strong piece of wire through it. In the case of the metal template this "axle" should be soldered to it. Cut a plywood disc the diameter of the desired wheel and drill a hole through the centre. Mould the rough shape of the wheel on the plywood disc with liberal amounts of plastic wood, insert the pin of the template through the hub and turn the template three or four times. This will remove the surplus plastic wood, leaving a perfectly shaped wheel. Allow the wood to dry, then reverse and repeat process. Sandpaper and bush the wheel when completed, the final finish with fine sandpaper being best applied by spinning the wheel on a lathe. This method results in a



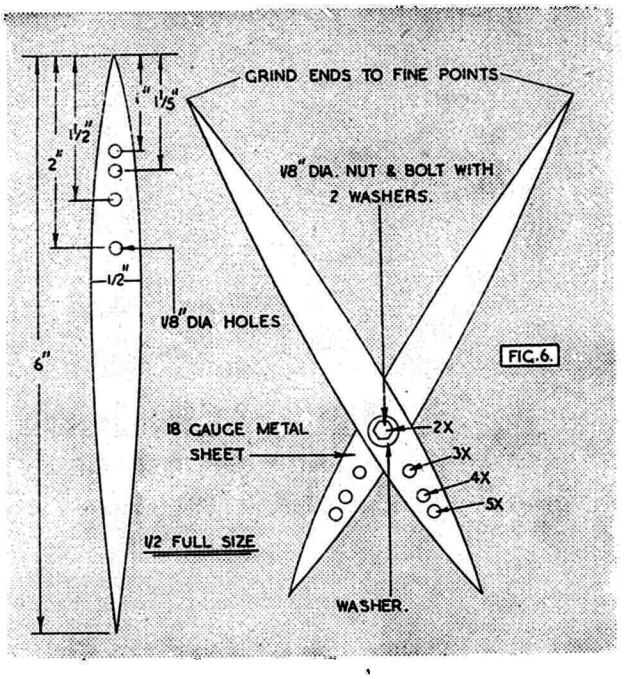
tremendously strong yet light wheel.

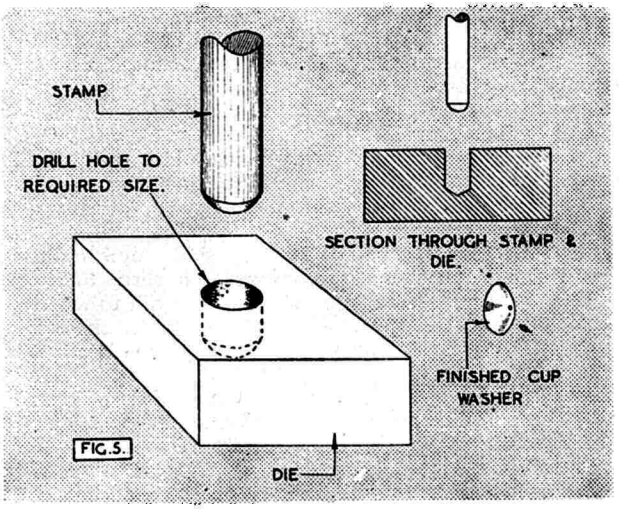
The fourth and final method, shown in Fig. 4, comes from L. E. FISHER, of Eltham, and again the material used is celluloid. First secure two identical hardwood wheels of the required size and sand both wheels until perfectly smooth, but making one about 3/64 in. smaller in diameter than the other. Make two moulds by impressing the wheels half way into moist Pyruma or similar material, then removing the wheels and allowing the moulds to dry. Sand off 1/64 in. all over from each wheel, then use the moulds in the normal way, pressing out the celluloid (previously heated to the plastic stage) by using the wheels as dies. The resulting half wheels are then reinforced in the hub with discs of thicker celluloid cemented on the inside and holes drilled through the centre. Two half wheels (one from each mould) are then fitted together, the smaller being pushed about 1/16 in. inside the other and then cemented.

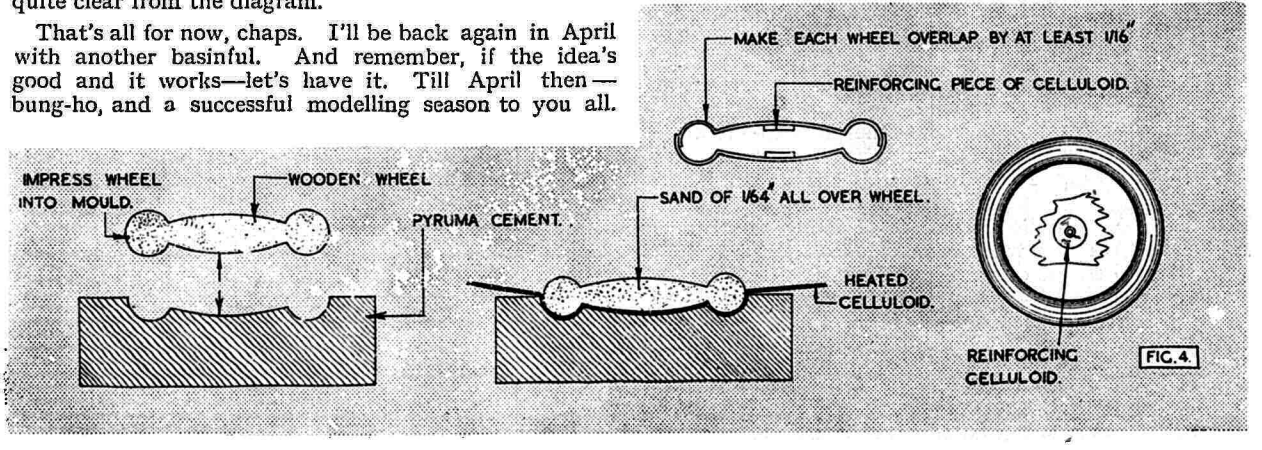
Nothing can be more annoying than running out of minor, but nevertheless indispensable, accessories when all the model shops are closed or miles away. A gadget, then, for manufacturing your own cup washers (Fig. 5), may well prove handy, and C. D. ALLEN, of Saffron Walden, whose idea it is, sent us some specimens which were certainly "dinkum." All that is necessary is a piece of steel or iron at least a half inch thick. The original was the head of a broken screw-hammer. In this piece of metal drill a hole about $\frac{1}{4}$ in. diameter and about $\frac{1}{4}$ in. deep; the shape of the drill head will leave the necessary cup shape at the bottom of the hole. File the end of a $\frac{1}{4}$ in. diameter rod to fit the cup-shaped bottom of the die. The material for the washers is thin sheet steel, easily obtained from dried milk tins. Cut several discs from the steel with the aid of an ordinary paper filing punch, flatten the discs and place one at a time in the hole in the die, place to rod over the disc and tap sharply two or three times with a hammer. Shake out the disc and it will be found to be a perfect washer; drill the necessary hole through the middle and file the edges smooth. Repeat the process as many times as necessary.

Scaling up plans is always a fiddly business and any idea calculated to dispense with much of the trouble incurred is sure to be popular. A. C. THORNS, of Swindon, suggests the use of a simple pair of proportionate dividers, illustrated in Fig. 6. By altering the position of the swivelling bolt, the dividers may be used to enlarge from two to six times, according to the number of holes incorporated. The construction is quite clear from the diagram.

That's all for now, chaps. I'll be back again in April with another basinful. And remember, if the idea's good and it works—let's have it. Till April then—bung-ho, and a successful modelling season to you all.







The Wisdom of Wang Ho

A SAGA OF THE ORIENT BY ROBERT JAMIESON

AS the glider reached its ceiling the line began to sag, and McSwindle slowed down the towing speed. Then the ring dropped off, and the line fell slowly and leisurely back to earth. The sailplane—as though rejoicing at being free in its natural element—did a diving bank away from the wind, then zoomed round and settled on an even keel. With effortless grace it began to circle, moving slowly down wind the while.

The Maestro—who had clicked the stop watch at the instant of the model's release—called out to the younger members who were wrapped in ecstatic contemplation of the soaring model.

"Now then, lads! Don't stand there as if you had all day—get after it!"

Recalled to their duties—which included line straightening and untangling before each flight—the younger fry set out in pursuit of the glider, already a mere speck in the blue.

"My—but it's grand sport!" said McSwindle, rejoining the Maestro. "Two seventeen three fifths; o.o.s.—" He paused and looked over the hill to where the 'plane had disappeared. A few small black dots straggled on to the skyline, moving in the same direction.

"Surprising, when you come to think of it—" he continued, "how simple some of these modern ideas really are. Towing up a glider, for instance. So simple—and yet it's no that long since it was—"

McGillicuddy interrupted him. "The art of tow-launching a glider was discovered many hundreds of years ago, out in China, by my ancestor Curly McGillicuddy—so called because his hair was a wee bit scanty. And glider flying has remained a national sport in that country to this very day—"

"I thought it was kite flying they went in for out in China?" McSwindle demanded.

"They fly kites, certainly," the Maestro replied. "But that is entirely due to the laziness of the philosopher Wang Ho, of whose wisdom you shall now—"

"O.K.," McSwindle interrupted, sitting down and relaxing. "It'll be a while before the lads get back with the model, so trot it out and we'll buy it. I won't say I believe you, mind—" but the Maestro silenced him with a look and plunged into the story.

My ancestor Curly McGillicuddy was, for those days, an accomplished aeromod, the Maestro began. He had progressed a long way from the twig and feathers stage of the Magill of Cuddia and was, in fact, experimenting with built up models covered with paper. Unfortunately none of his models or plans have come down to us; as flying in these days was regarded as black magic, and looked on by the superstitious in the same light as broomstick riding, evil eye casting, cattle sickening and crop blighting.

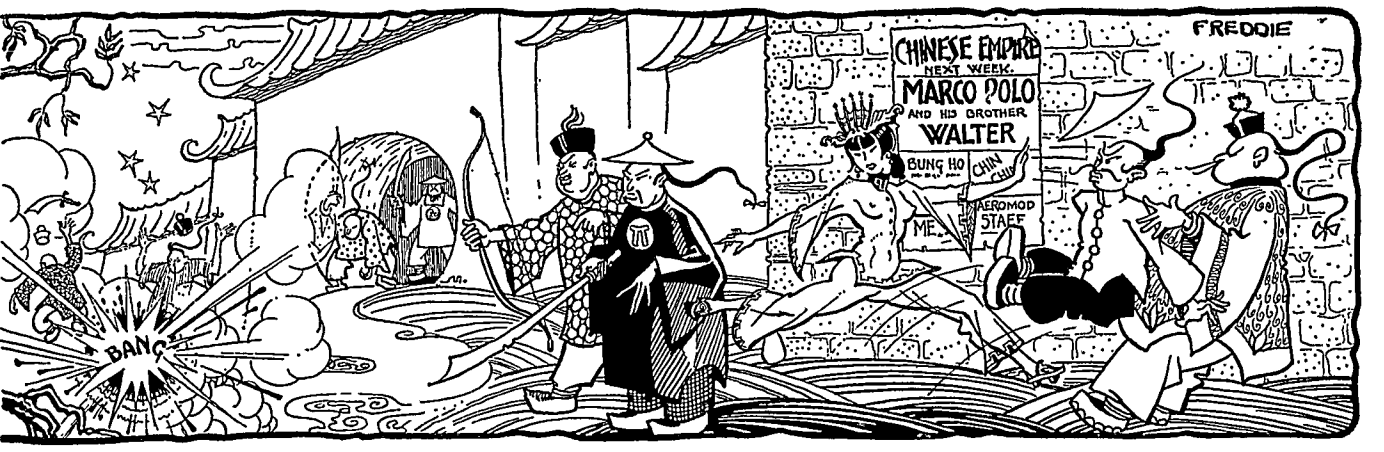
Thus all his research had to be done in secret—for health reasons if for nothing else—for the criminal code of those days was very harsh on witches and magicians.

From his constant study of the skies Curly had also become an accomplished navigator, and had joined Marco Polo's expedition to China in that capacity.

During their long travels I'm afraid that his mind was not entirely on his official duties. For a sudden inspiration had struck him as to a probable method of steering his models, and he was anxious to try it out—having no chance of doing so while the voyage was in progress.

Curly's interest was all in gliders, and at home he had been accustomed to launch them from the top of hills or other suitable slopes. He was hoping to give his new idea a try out when the party arrived at the Chinese port of Hoo Flung, but was greatly disappointed on arriving to find that the port was built in dead flat country, and that all the houses were only one storey high—that there was not, in fact, any suitable eminence where sufficient height could be gained to give his new gadget a chance.

The party halted for some days in Hoo Flung, and were entertained by various mandarins, salamanders, etc., of high rank and great nobility, but Curly spent all his time searching for some sort of hill from which to launch his glider. At last he discovered, in quiet country at the back of the town, a square mound that appeared to be open to the public, as it was laid out like a park and decorated with an ornamental gateway at the top. He decided this would do, and resolved—out of deference to local customs—to come out first thing in the morning with his model. Rising therefore at streak of day, he made his way toward the mound, and was gratified to observe that the place appeared to be deserted. Pleased to think that he would be able to conduct his experiments in private he made his way to the summit. When he was only a few yards from the ornamental gateway at the top he commenced to trim his model for flight, and so engrossed was he in these preparations that he failed to notice a string stretched across the path in front of



him—with the unfortunate result that he tripped and fell heavily.

Several things happened simultaneously. There was a loud BANG and a column of flames and smoke shot into the air; at the same time a great quantity of fire-crackers began to pop and splutter in the bushes around him, and from the ornamental gate a slim Chinese maiden ran, squealing with fear and embarrassment—for Curly was quick to notice that her raiment was of the finest quality—albeit somewhat lacking in quantity.

Curly was also dismayed to notice that the mound was not such a deserted place as he imagined, for from behind all and every bush emerged a great quantity of men who now advanced toward him—their gestures anything but friendly. Though his knowledge of the Chinese tongue was of the scantiest he had no difficulty in divining their intentions, the gestures indicating throat slitting, stomach kicking and leg wrenching being much the same in any language. One course was indicated, and Curly took it; he set off at full speed—still clutching his model. The bush lurkers took up the chase with shrill cries.

Presently, as his feet worked overtime on the rough road, he became aware of a figure running beside him. At first he thought he was on the point of being overtaken, but a second glance reassured him. This was no enemy—but a companion in distress. He was an old man, clothed in the richest of robes, and of a wise and kindly cast of features—also he was puffing badly, being completely blown, and on the point of collapse.

By this time they had reached the outskirts of the town, and Curly grabbed his companion's arm. "Quick! In here!" he gasped, and pulled the old man into a dark side alley they were passing. Crouching in the shelter of a doorway they watched their pursuers go by in full cry.

As his breath came back, the old man told Curly the cause of the trouble. His name was Wang Ho, and he was professor of aerial demonology and weather control at the local university, being indeed, a sage of no little fame in Hoo Flung; though latterly his prestige had begun to wane somewhat, owing to several of his more recent magical demonstrations going sour on him. That morning's accident, he informed Curly, would just about finish him.

He had been approached by the local farmers' union, as the crops in the neighbourhood had begun to wilt from the drought now scorching the land; and these gentlemen had suggested that it was about time he justified his salary and produced some rain—adding that if he couldn't manage he was not to worry, as there were plenty of young magicians disengaged at present, and anyway wasn't it about time he was retiring?

Wang Ho assured the deputation that he would not dream of depriving them of his services yet, and that the production of rain was mere child's play. If they would be so good as to attend the sacred mound—called the hill of well-filled stomachs—at dawn, and remain hidden from the demons thereon, they would see a wondrous sign, and rain would follow. Unfortunately they had also seen Curly, who had tripped over the wire and set the show off prematurely.

"Such an old, well tried favourite, too," said Wang Ho, mopping his brow. "No. 47 in the magicians' handbook. Maiden ascending in column of fire—"

Curly apologised for the trouble he had caused.

"Think nothing of it, my foreign friend," said Wang Ho. "A friend will assist the weary traveller with his hand—and enemy with his foot, and you—"

Curly interrupted the old sage's philosophy to ask about the lady in the case.

"Ah, the beauteous Budding Almond! Have no fears for her safety, she has worked long with me, and knows how to take care of herself. Would that it were so with me, for after this morning's events I dare not show my miserable countenance in the market place. Enough of my troubles—tell me, my friend, what is the purpose of that strange engine you carry?"

Curly at once plunged into an explanation of gliders and their function, and told the old sage of his problem. Wang Ho listened intently, thoughtfully stroking his chin the while.

"But this is true magic," he cried when Curly had finished. "A flock of these man-made birds, flown over the hill of well-filled stomachs at dawn would certainly placate the farmers' guild, and might even induce rain to fall—"

Curly was quite certain his model would fly—but he had to get it up first, and there were no hills handy. As he had taken a liking to Wang Ho, Curly suggested that the sage accompany Marco Polo's party when they set out for the city of Fling Hi. He could act as a guide—since for health reasons he would have to get out of town in any case—and Curly hoped that in the course of their travels hills of some sort would surely be encountered, and they could give the glider a proper try out. If successful, Wang Ho could return and stage a come-back—working miracles with man-made birds.

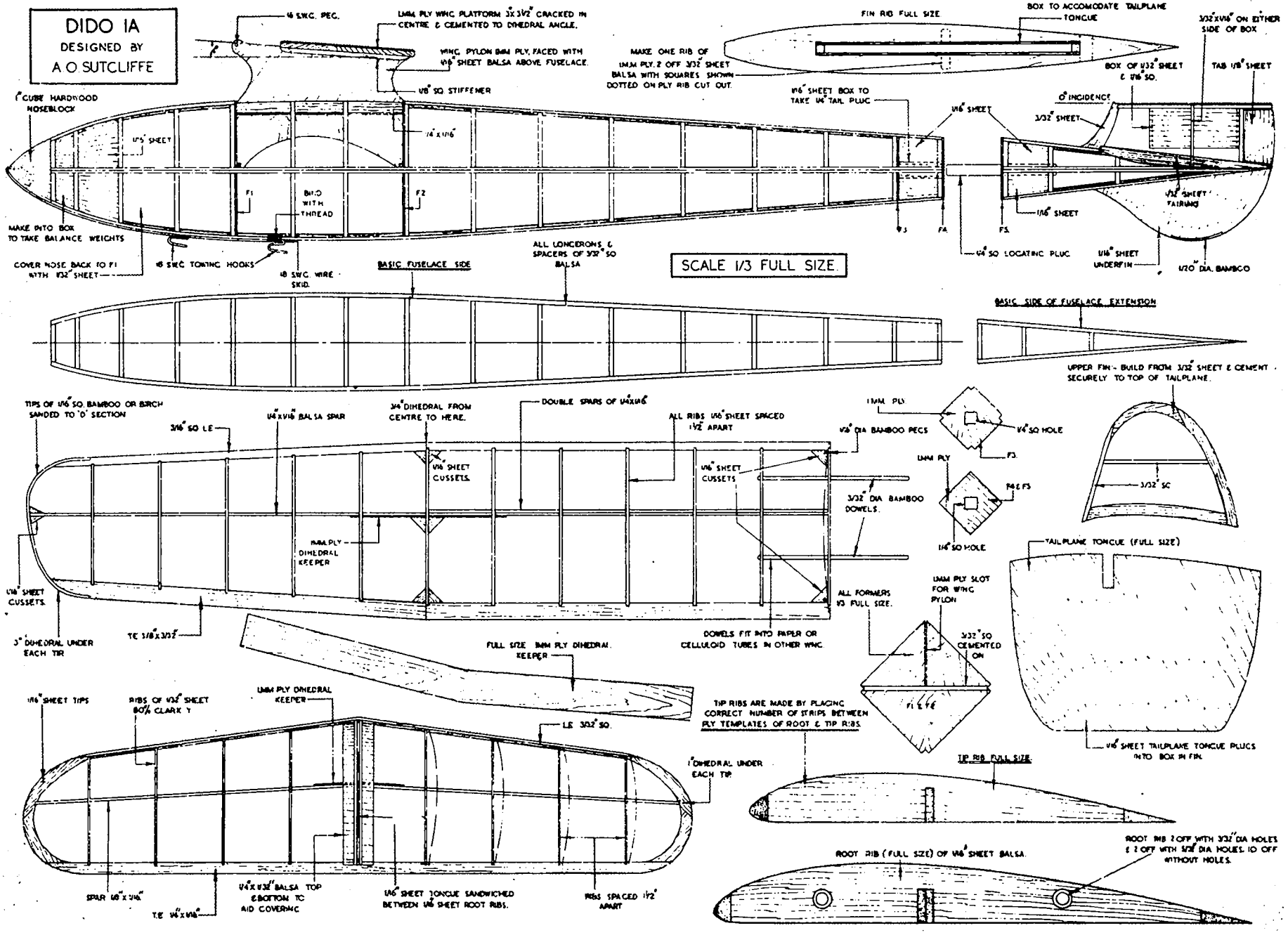
"I shall cause songs of gratitude to be sung at the graves of your ancestors for a thousand years!" cried Wang Ho, when Curly had made his proposal. From the specimens of Chinese music he had heard Curly considered this rather a doubtful blessing; but he said nothing, not wishing to hurt the old sage's feelings. Together they set out for his quarters in the town.

(To be continued.)

DIDO 1A

DESIGNED BY

A O SUTCLIFFE



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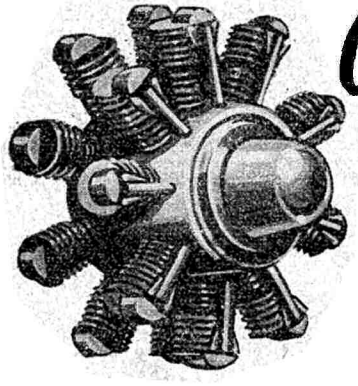

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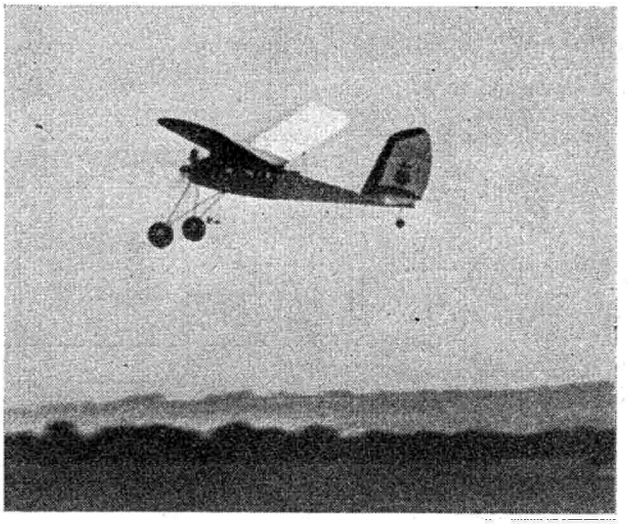


Mr. F. E. Allen sends us this photo. of a good old slab-sider of seemingly ancient vintage "gaining height". This model is probably the bête noire of the letter below, but nevertheless there is a strange fascination about these old types with their leisurely climb and stability in flight.

EXTRACTS FROM A READER'S LETTER:

"Regarding Petrol Models, I consider this branch of the sport to be in a particularly deep rut. Frankly, the usual British Petrol Model stinks! *Many of them are an insult to a good engine. I have no idea why such atrocities are built—shapeless boxes in lieu of a fuselage; the never changing parallel chord wing with aspect ratio of a barn-door; an uncowled engine and large lengths of steel wire as undercarts. Very rarely have I seen a Petrol Model in this country which has given me the impression of efficiency. (One notable exception is Bill White's job, a design which deserves a lot of credit.) True, I have no desire to see the type of model known as 'the Pencil Bomber' in U.S.A. gain a footing in this country. As you may know, the type has now been banned from contest flying in America.*

"Although very few people seem to think it, it is possible to build petrol models of an entirely different class to those mentioned above:—

Fuselage

"The lack of inspiration in fuselage design has been appalling: 99 per cent. of Gas Models in this country have a shapeless box as a fuselage, usually with an abrupt step just behind the engine, meant *to represent a cabin. There is absolutely no attempt at streamlining, so that at least a quarter of the power developed by the engine is used to drag an absolutely useless fuselage through the air. Is this because Petroleers are so much at loggerheads with 'rubber ears' that they are too proud to follow the excellent example of the latter and streamline; or are the majority of Petroleers too lazy to build streamlined fuselages?*

Wings

"Here again originality is sadly lacking: Very rarely is any type of wing seen other than the parallel chord type with an aspect ratio of about six. Even the wing sections used seem to be pre-determined by tradition. I advocate breaking away from the deep slow sections in favour of medium speed, high lift sections (e.g. *Grant G.9 and 10). Less thrust is needed to give a similar amount of lift, giving a faster climb, although the glide may suffer slightly, in that it becomes somewhat faster.*

Engine Mount and Cowling

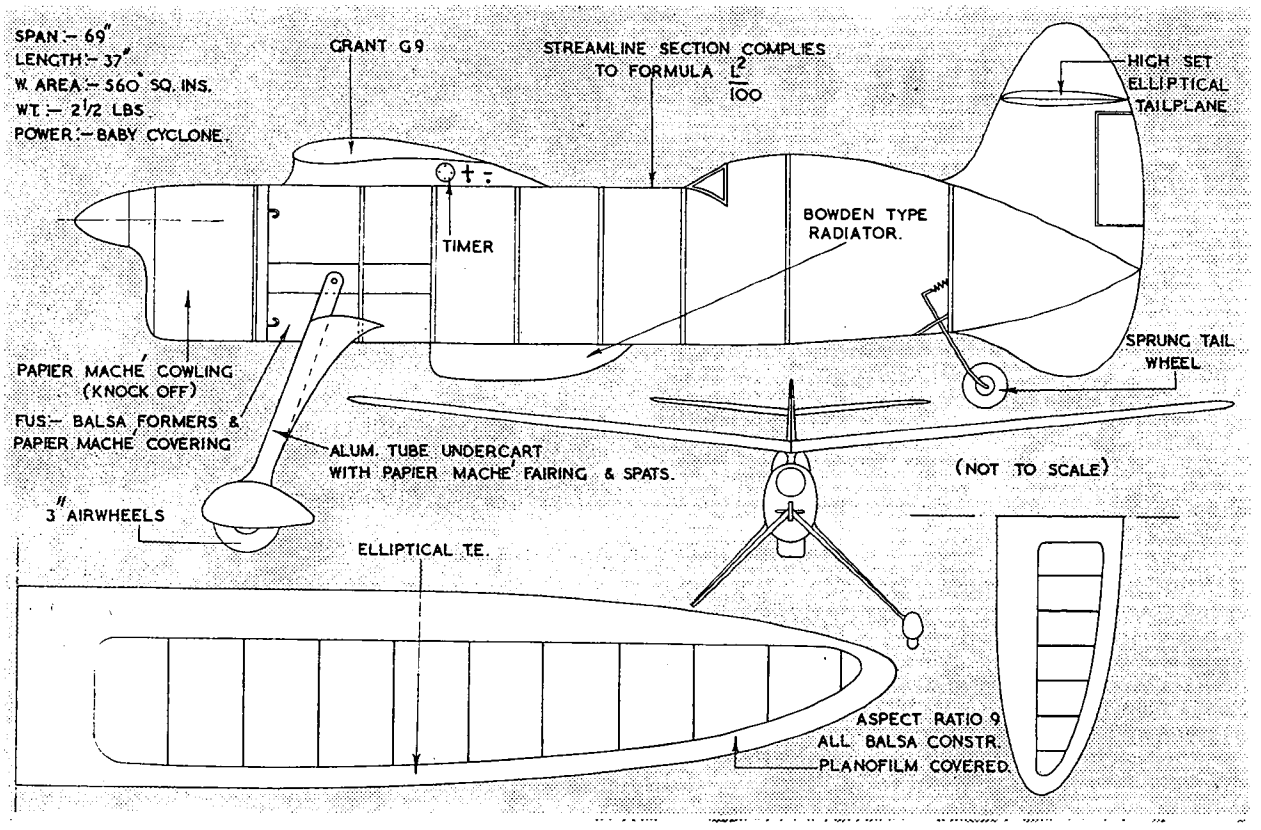
"I definitely advocate the knock-off mount, as used by Bowden and Forster. The number of people who disregard the advice of these two stalwarts is amazing." (Thanks, fella'!! J. F. P. F.) *"Very few seem to have enough patience to make their mountings knock-off, and fewer still have patience enough to make a cowling. As to undercarts my views are those of D. A. Russell. However, it seems that no matter what is said, the average aeromodeller will stick to his horrible wire affair.*

"The above views are entirely my own. The British Petrol Model is in a rut, and it seems to me it is going to stay in it unless something is done quickly."

THE above outspoken letter comes from a demobilised (if not demoralised) Fleet Air Arm Pilot, P. Bainbridge (who in the course of his service saw something of American modelling and modellers), and I think for the good of some of our souls, cries out for publication in "Petrol Topics." American influence is obvious in the model he is now building, and which he evidently considers the last word in efficiency and looks, for he goes so far as to add: "You *must* admit that it is not unpleasant to look at." (The italics are mine!!)

I wonder how many readers *will* admit this; personally, I find it rather hard, but as I agree so heartily with most of his foregoing remarks it seems only fair to publish the sketch of his recipe for getting out of the ruts he mentions!! He calls the model "Classé Maché," the fuselage being almost entirely papier-maché. (See overleaf.)

At the time of writing it was not possible to foresee what the petrol fraternity had in store for us at Dorland Hall Exhibition, but personally I believe that many of his criticisms have proved to be unfounded. Nevertheless, I cannot help feeling that, at least up to the middle of 1945, his remarks, especially as regards the parallel chord wing and box fuselage, applied to a very large



CLASSÉ MACHÉ

section of petroleers in this country, and it is to be hoped that these unimaginative culprits will take his remarks to heart.

Personally, I have only built one model with parallel chord wings, and have now even given up tapered wings in favour of ellipticals, and am even fitting the latter to flying-boats. Neither have I yet built a square slab-sided fuselage in spite of considerable persuasion by C. E. B. on the score of ease and speed. There is, however, no question that to a *real beginner*, the slab-sided box fuselage has much to recommend it. The reasons for it and the simplicity of its construction were most excellently set out in Col. Bowden's really sensible and practical beginners' model "The Bowden Contest," described and illustrated in the November AEROMODELLER.

What Mr. Bainbridge overlooks, I think, is the undoubted fact (brought home to me in hundreds of letters during and since the war from readers) that 90 per cent. of petroleers in Britain *are* beginners. Of the remaining 10 per cent. (*i.e.* men with more or less experience of building and flying petrol models before the war) perhaps half of them were until quite recently in the Services and unable to give practical expression to their latest ideas, and perhaps another quarter, in any case, had never ventured to design their own planes pre-war, and had only built from kits (mostly American) or from other people's designs.

Wing Tip Construction.

It certainly is amazing how much "plugging" it takes in this country to have the slightest general effect on design. I suppose if Col. Bowden has described and advocated his knock-off engine mount once in print, he has done so a dozen times both in his book and in articles. Yet we still continually see engines bolted solidly to fixed bearers, sometimes wooden, but quite often sheet metal. Once the latter is bent, it *is* bent; the thrust line is all wrong and the chances are that after any fairly serious knock, any further consistent flying that day will be most unlikely, and until properly straightened out, there is a risk of much more serious damage occurring. Neither the fear of this, nor the advantages of being able, with a knock-off mount, to alter the thrust line during initial flight tests, seem to have the slightest effect on a certain type of mind. It is beyond my comprehension how the "fixed engine merchant" ever arrives at the correct degree of offset.

I want to try for the last time to persuade the die-hards into my way of thinking over wing-tips. A great number of builders, even if they trouble to build a tapered or elliptical wing, still fail to taper the depth of the main spar. Even if they do this, the extreme tips are frequently ruined by an abrupt *downward* bend of the *top* spar from the last rib to the extreme tip. The reason is that it is of course easier to lay the extreme tip flat on the building board than building it on a specially arranged bevel or inclined plane.

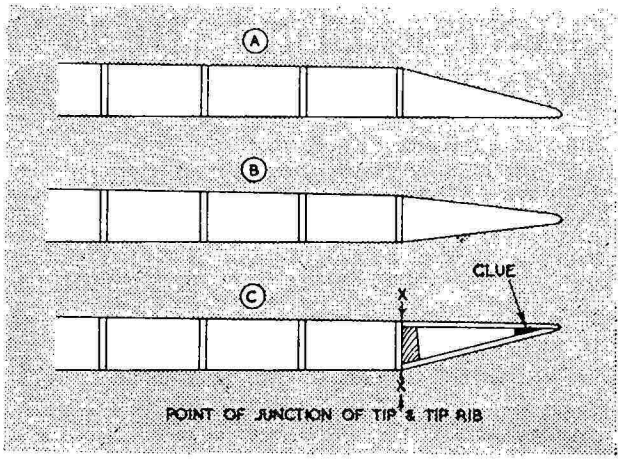
When viewed from in front the extreme tip may be in line with the bottom surface of the wing (A), somewhere between this and the upper surface (B), or in line with the upper surface (C).

The advantage of the third position (C) is that the upper camber of the wing can be carried faithfully to the extreme tip (where losses are greatest and where efficiency counts most). Furthermore, the projected side

area presented by this fairly steeply dihedralled undersurface is considerable, and being at the extreme tip has the advantage of a longer/moment arm than an equivalent area further inboard. The use of these tips therefore permits the use of much less dihedral to the wing as a whole. (See sketch opposite.)

In addition to increased efficiency, this type of tip can be built very much more easily and robustly than can B (right), if it is built as a separate unit. Using 1/16-in. sheet balsa top and bottom (the grain running chordwise for the bottom surface and spanwise for the upper) it simply consists of a hollow box, the inner side of which consists of an additional tip rib. The top and bottom surfaces are glued together liberally all the way around the curved outer and trailing edges. A small piece of solid soft balsa running spanwise may be inserted at the L.E. and sanded to shape and the unit is ready for silk covering before being subsequently glued to the outer side of the tip rib of the wing.

There is also another advantage in building tips as separate units. Covering the extreme tips of wings with silk or Planefilm is always somewhat tricky, and would be far easier if the wing tip were straight instead of curved. The spanwise tension needs to be considerable, and while the photopaste or other adhesive is drying the silk is liable to slip in some places and not in others. To withstand this tension on the tip rib. I build two tip ribs about 1 in. apart, and cover the intervening space top and bottom from L.E. to T.E. with sheet 3-ply or balsa, thus making a very strong box of true airfoil section, over which the silk is easily stretched without distorting the tip rib. After doping and drying, the silk over the outer surface of the tip rib box is cut away with a razor blade and the inner surface of the tip unit similarly denuded of silk. Both these surfaces are then liberally smeared with glue so that a wood to wood union is obtained, and I've never yet knocked one of these tips off. I once accidentally put my heel down on to one, and instead of wrecking the whole wing tip, as would have happened if the tip was integral with the wing, the tip unit broke away clean along this line of junction and only required re-gluing to restore it exactly to its former position. In theory, at least, these tips can be almost classed as " knock-off," and in any case if damaged in a crash, it would be very simple to cut off the remains clean with a razor blade along this junction line and build and fit a new tip unit—far simpler than repairing a tip which is an integral part of the wing, as this may involve re-covering the whole upper camber of the wing, at least.



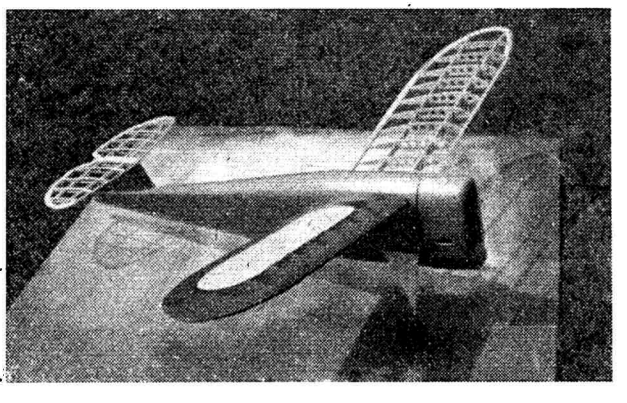
Engine Service and Repairs.

While doing what I can (*vide* Author's note in my book " Model Aircraft Petrol Engines ") to encourage the manufacture and good after-sales service of engines in this country, it must surely be obvious to would-be manufacturers that I cannot (and would not on principle) do their advertising for them in " Petrol Topics." What I have written, I have written purely as an amateur user and consumer of engines, keen to see them cheap and plentiful (and preferably British produced) for the benefit of petroleers generally.

I have had a number of letters from would-be or intending " amateur-professionals " hoping for a " write up " in this feature, and I may as well make it clear now that apart from the occasionally inevitable mention of well-known engines by name, I do not intentionally boost any particular makes of engine, although with the present dollar exchange situation, and on patriotic grounds, it is only natural that we should all like to see some really good British engines capturing some of the world market.

In view of the dollar situation, however, and the impossibility of getting repairs or spares to old American engines, it should be of general interest to petroleers to hear that a correspondent who was badly wounded over Germany, is planning not only production of a popular capacity engine, as are others, but also a repair service for most well known makes of engine, including rebushing of crankshafts, and fitting new con-rods, and (in engines with detachable cylinders) fitting new cylinders and pistons ground and honed to within ·001 in. limits.

It is therefore with pleasurable anticipation that we can look to the advertisement pages of the AEROMODELLER very soon to show evidence at last of the *existence* of petrol modelling in this country. For the last two or three years, any foreigner looking through the advertisements could not be blamed for assuming that the petrol game was quite extinct, if it ever existed ! Judging from readers' letters, and from some of my own old crocks, I should imagine there are more compression-less wrecks up and down the country than sound engines, and work enough to keep anyone busy for years ! !



A neat little 45 in. span. 26 oz. model built by Mr. S. A. Smith of Chatham. The model, nearing completion, is to be powered with a 2·5 c.c. engine of Mr. Smith's own design. Note the detachable cowling, faired in under-carriage and the high tailplane.

COUNTERACTING THE EFFECTS OF ENGINE FAILURE IN TWIN-ENGINED MODEL AIRCRAFT. PART III

BY N · K · WALKER, B.Sc

The "aerodynamic" method.

WE saw in Part Two that though Mr. Maxwell's statement that the effect of the reduction of moment arm is much less than that of the slipstream is true, the main stabilization effect is due to the torque. It is therefore now suggested that these effects can be made to control the thrust completely and that neither engine offset or fin toe-in is necessary.

First calculate the angle of sideslip from (18) and then the yawing moment from (19). There will also be some Maxwell effect from the slipstream since the sideslip will give an effective offset angle to the propeller of $\psi^1 = \frac{\beta}{1+a.}$

Should this yawing moment be insufficient to balance the propeller moment then the dihedral must be decreased or the fin area increased until a balance is attained.

If the torque is small and the thrust great the dihedral will tend to be much smaller than usual and knowledgeable aeromodellers will begin to worry about spiral stability. It can, however, be shown that, provided the dihedral is not less than a certain amount, the fin can be as large as we like.

This minimum dihedral θ is given by :—

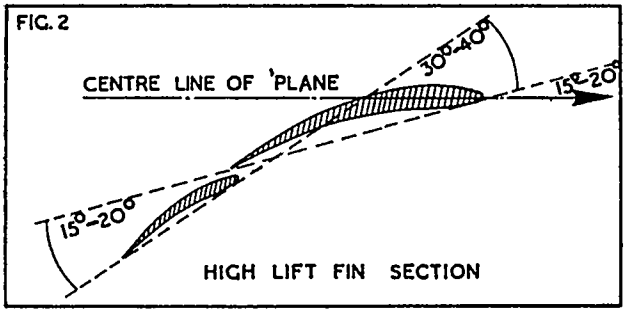
$$\sin\theta = 0{\cdot}12\ C_L \left(\frac{2+AR}{AR}\right)$$ for constant chord wings

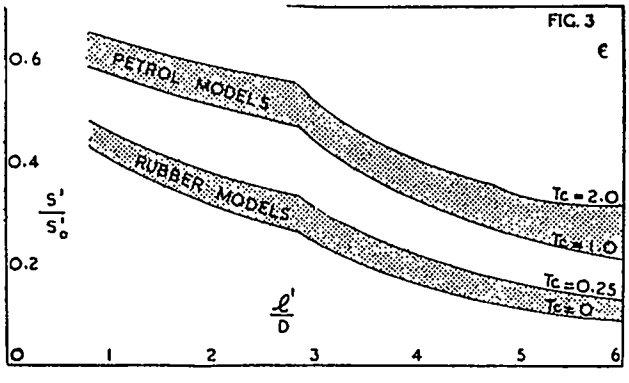
or the constant will be 0·10 for elliptic wings.

If necessary a large amount of washout, say 5 degrees, can be given by the wing tips and this will reduce the minimum dihedral by one quarter.

Necessary modifications to Maxwell's model to obviate the use of offset.

If we work out the available yawing moments for Maxwell's model with no offset we have 67 per cent. from the torque effect as before and 24·5 per cent. from the Maxwell effect (the effective offset is now 4·3 degrees), so we have 87 per cent. of the amount calculated for balance. Both the effects are proportional to the sideslip or the fin area and inversely proportional to the dihedral, so if the dihedral were reduced to 0·64 in. at the tip or the fin area or moment arm increased by one-sixth, balance should be attained.





General remarks.

(*a*) The great importance of the aerodynamic effect shows that if this is unfavourable, *i.e.*, if the engines revolve outwards, balance may be difficult.

In such case the opposite procedure can be applied and dihedral increased as much as possible.

(*b*) The slipstream is not uniform. We have assumed that the slipstream has a sharp edge, which is not true. If a fin is near the edge of the slipstream the Maxwell or Burns effects will be over estimated. Now if we assume that the whole of the 5 per cent. over estimation occurred on the Maxwell effect in the discussion of his experiment this means that in this case the effect was over estimated by 18 per cent. As we should expect, this fin is definitely off centre in the slipstream.

(*c*) The aerodynamic method is very similar to the use of right thrust to control torque. Here the yawing moment due to the torque sideslip is counteracted by a deliberately produced thrust moment due to offsetting the thrust line to the right. We also know that less right thrust is needed if the dihedral is increased.

Estimating the required fin area.

The value of C_L max. for a symmetrical fin is 0·75, for a cambered fin, 1·2, and for a cambered fin with slotted cambered rudder acting as a flap, 1·5 (see Fig. 2), and these values can be inserted in equation (10), but as they are only rough, it is a good idea to first estimate whether static balance is possible, and if so, perform a static test to find S^1_0, the fin area required for a static balance. Multiply S^1_0 by the ratio S^1/S^1_0, given in Fig. 3, and the result will be the fin area necessary for free flight (found without assuming a value for C_L).

It will be seen that the fin area necessary for balance in flight is always much less than that for static balance, and that in many cases static balance may be impossible although a flight balance is obtainable.

Dr. Forster's experiment.

Dr. Forster kindly supplied me with the following details of his experiment :—

$d = 7\frac{1}{2}''$, $D = 12''$. $\therefore A = 113{\cdot}2\square''$. $l = 24''$ to $36''$.
h_2 $5\frac{1}{2}''$ so $l^1 = 29\frac{1}{2}''$ to $41\frac{1}{2}''$.
Top fin area = $45\square''$.

Lower fin area = $40\square''$ fin sectional symmetrical.

From equation (10) we can calculate the proportion of the slipstream which must be captured by the fin assuming $C_L = 0{\cdot}75$.

(*a*) $l = 24''$. $l^1 = 29\frac{1}{2}''$ so $l^1/_D = 2{\cdot}46$.

$$S^1/A_F = \frac{7\frac{1}{2}}{24} \times \frac{1}{0{\cdot}75} \times 2 = 83{\cdot}3 \text{ per cent.}$$

$A_F = 1{\cdot}74 \times A$ (from Fig. 1)
$\therefore S^1 = 1{\cdot}74 \times 113{\cdot}2 \times {\cdot}833 = 164$ sq. ins.

(*b*) $l = 36''$. $l^1 = 41{\cdot}5''$. $\therefore l^1/_D = 3{\cdot}46$.

$$S^1/A_F = \frac{7\frac{1}{2}}{36} \times \frac{1}{0{\cdot}75} \times 2 = 55{\cdot}6 \text{ per cent.}$$

$A_F = 2{\cdot}52 \times A$ (from Fig. 1).
$\therefore S^1 = 2{\cdot}52 \times 113{\cdot}2 \times {\cdot}556 = 159$ sq. ins.

We see, therefore, that even with both upper and lower fins in place, the available fin area is only half that actually required for balance, and that the required fin area is almost unaffected by the increase of moment arm from 2 ft. to 3 ft. (It can also be shown from equation (10) that the length of a moment arm makes little difference to the result of a static test, but that a long moment arm greatly improves the chance of a balance in flight as can be seen from Fig. 3.)

Turning to Fig. 3 and remembering that $l^1/_D$ is 3·46 for the 3 ft. moment arm we see that $S^1/S = 0{\cdot}39$ to 0·46 according to the thrust conditions and hence the fin area for flight balance should be between 62 and 72 sq. ins., so had Dr. Forster been able to test his model in flight it should have been slightly overcorrected with both fins in place.

OVER TO YOU

"The nest of the Boffin is quite unmistakable,
It is lined with odd parts of models unmakable.
But this we advise
Don't criticize—
For his faith in his skill is unshakable."

Czech Mates.

Enthusiasm for aeromodelling is developing rapidly in Czechoslovakia, writes our Prague correspondent, Pan Moucka. Their Fourth Annual Meeting was held recently at Kyje Airfield near Prague of which Rozlet's commentator remarks " for the first time it could be held quite openly without having to pretend it was organised solely for the benefit of aircraft and engineering apprentices as was necessary during the occupation . . . How different it all was this year." Flags of the allied nations were ceremoniously unfurled to mark the opening, followed by a speech from Bretislav Semrád, Deputy Chairman of Czech National Aeroclub who may be remembered as a pre-war contributor to the AEROMODELLER. Representatives of the Home Office, Ministry of Education and the principal Czech aviation companies were amongst the guests of honour, while members of allied embassies were also present. Strong winds—almost unknown to the fortunate Czechs—brought nearly a third of the eighty entrants to grief. The report adds: " We like to record that no ' flying leaves ' were present this year, which need only a sneeze and they dissolve into thin air." Winning rubber-powered time of 4 : 15 secured a trophy and first prize of K.1,000 (about £5), for J. Cerveny.

Swedes in the Field.

Lennart Sundstrom of Ulvsunda who edits the fascinating Swedish " Model Flyhandboken " is anxious to hear from English modellers who would like plans included in future issues. Swedish modellers have willynilly, been largely under German influence during the war years: they are now trying to make up for lost time and learn all they can of the movement in this country. Rubber shortage has caused them too to concentrate on glider design with pleasing results.

Rhone Records.

Guy Borge of the Rhone Club gives us interesting news of tailless developments in France. His club organised a special contest for this type last Summer attracting 15 entries. Bad weather spoilt any hopes of record times—Borge's 53 seconds won the event—but in more favourable conditions he has clocked over 30 mins., his best contest times being 4 mins. and 2·50 mins. o.o.s. Enthusiasts are invited to get in touch with him to enchange ideas—he has nearly a dozen successful tailless models to his credit over the past two years.

Alpine Antics.

Another interesting contest reported to the Boffin is the annual Swiss Model Glider Compass Steering event. Research into this branch of model aeronautics attracts a big continental following, and while some very curious gadgets are seen, others demonstrate their excellence against all the gloomy forebodings of the " paper kings."

Photo, Rozlet.

Photo Rozlet.

Allied flags displayed at a recent Czech Model Meeting in honour of their allies.

Carmina — a popular Swedish sailplane.

Line-up of competitors at the Fourth Annual Model Meeting of Czechoslovak clubs.

Stig Hoffstrom—well known Swedish artist—with his flying scale Focke Wulf Stieglitz.

THEORY——VERSUS——PRACTICE

BY THEO RISEN

Theory versus Practice : a phrase pregnant with controversy, and one which we hope this article will help to banish from the aeromodellers' vocabulary. Written by a modeller, who, under his own name, is well known in the competition field, it presents that which is to our mind the sanest (and indeed the only) way of looking at Theory. There are faults on both sides : Practical men have often been bigoted, whilst theorists have often made wrong statements based upon incomplete and even inaccurate facts. It is for both sides to realise that each is part of a single unit, and that one without the other would be incomplete and of little value.

I HAVE often been asked why model plane builders and designers should take any interest in theory. My answer has invariably been that theory, when intelligently used, makes for economy in time and money in the period when a model is being designed and developed. If a new design is being developed by the method of trial and error, it does not take much common sense to realise that an understanding of why a particular fault is present generally leads to suggestions for a probable cure. A guess in the dark is, however, likely to give no better results and may even make the fault worse.

If a theorist sits down to write an article, there should always be at the back of his mind the basic thought that he is trying to explain something to somebody else, in terms of ideas that either (1) the other chap can grasp, or (2) with which he is already familiar. Since the standard of aeromodellers is so varied, it can be appreciated that the writer has got to assess the average standard of the people for whom he is writing. Quite often this is never considered, the main idea being to get the explanation down in the most concise form. That is why mathematics and formulæ are found in theoretical articles. Mathematics is really only a specialised form of shorthand that allows complicated ideas to be written down in a form that is not only concise but also allows the basic ideas to be twisted into new forms more convenient for calculation.

With this thought in mind, it can be appreciated that a formula can always be translated back in terms of understandable ideas if the key to the formula is given. This gives the clue to the reason why many people turn over the page when they see a theory article, the usual reaction being " Crikey, I can't understand that, it's much too complicated." If the article *is* too complicated to understand, it may be due to one of three reasons : (1) The explanation in the article is not sufficiently clear; (2) the reader is not prepared to take the trouble of reading the article and attempting to understand it; (3) the knowledge of the reader is not up to the standard set by the writer. (1) may be due to the fact that the writer does not understand the subject well enough himself or has not a sufficiently practical outlook to explain his ideas in terms of things that the average aeromodeller can understand. (2) is just pig-headedness on the part of the reader, and I cannot find words strong enough to express my opinion of a chap like that. If the reason is (3), then there is nothing the reader can do about it except put in a plea to the theorists in the Readers' Letters section to reduce the standard they set when writing an article.

I think that an indication of how a " practical " aeromodeller should read an article on theory would smooth out the difficulties often encountered. The first thing to do is to read the article up to where the first formula occurs, skip the formula and read each block of explanation as you come to it, and continue like this to the end of the article. Then look through the article again to see if any of the formulæ are familiar and where they fit the general trend of explanation. If your knowledge of maths. is limited, this is probably about as far as you can go, *but if* the writer has done his job properly, this should be sufficient to give you a clear idea of the things he is trying to explain and how he has explained them, together with the general trend of the argument. If it is appreciated that the mathematics is only a justification of the statements made and the explanations given, then this method should be enough, without wading through the proofs that the writer gives, to make the whole business clear. If, by this time, the article is still not clear in its explanation, then it is no use proceeding any further, since the article *is* too complicated.

When I have done some calculations for a model plane, I am quite often asked what use they are, or what good they do me. I think the easiest way of answering this sort of question is to indicate my personal outlook on theory. I consider myself to be a " practical theorist," *i.e.* I don't work out theories to amuse myself or fool other people, but I do it to obtain an understanding of why things happen and how to get rid of undesirable characteristics in model planes. A theory is no use to me unless it gives me a reasonably accurate answer to a problem in the least time and with the least effort (consideration, of course, being paid to the relative importance of the answer). Incidentally, " guestimation " has nothing against it if there is no reasonable way of calculating the answer. Personally, I would prefer to spend five minutes calculating the fin area of a new experimental model, knowing that the answer would be within 5 per cent. (say) of the area required, than guess the fin area, smash the model, spend much time and money on repairs and make another guess (possibly repeating this several times).

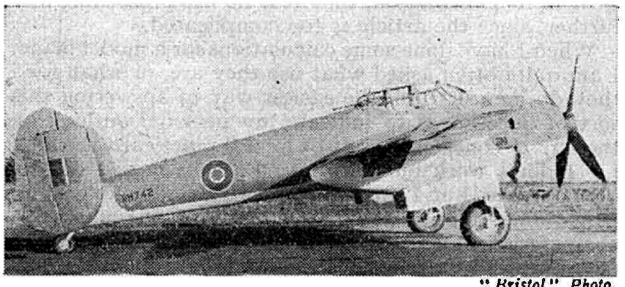
Intelligent use of theory goes a long way to make model planes interesting in the sense that one can say that the model is not a modified crib of a standard design but something very personal, the result of combining common sense, experience and theory to give a model that (like the full size aircraft) required only comparatively small modifications to make it successful. This surely is designing, making and flying " model aircraft " in the true sense of the word, rather than the restricted way in which some people use it at the present time.

In conclusion, may I express the hope that I have cleared up some of the basic queries often raised about theory. Also that the average model plane maker will not look upon the theorist as someone trying to show how clever he is or how dumb you (the reader) are. I hope I have pictured him as a chap, probably not as expert as you in your own line, trying to explain to you something he understands in terms of ideas you can understand and, at the same time, making a contribution to the fundamental knowledge of model aeronautics. If I have managed to do this, I shall consider the time spent writing this article to have been spent in the most profitable way that I could devise.

MONTHLY MEMORANDA

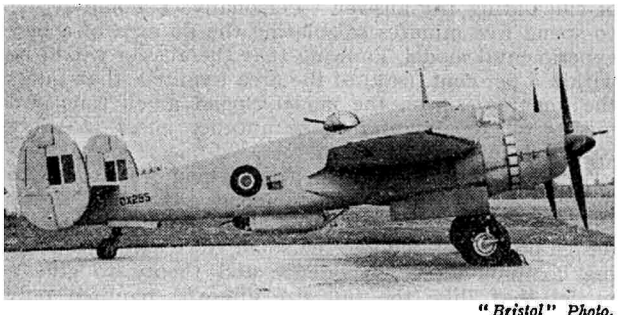
BY O·G·THETFORD

Wings to Come. *Aptly named is the Handley Page Manx tailless experimental two-seater. The manufacturers have long been noted for their interest in unorthodox aircraft.*



"Bristol" Photo.

Beaufighter Successor. *Bristol's Brigand replaces the Beaufighter T.F.X. as the standard torpedo-strike aircraft of Coastal Command. Heavily-armed, the Brigand gave an impressive display at the Farnborough Exhibition in October last where it was on public view for the first time.*

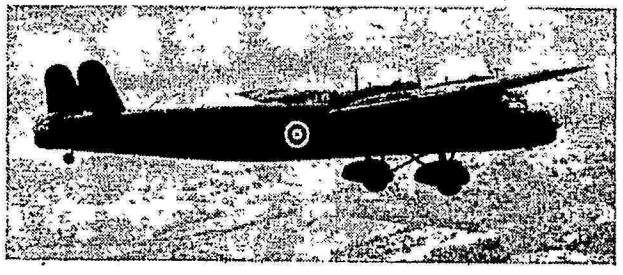


"Bristol" Photo.

They Also Serve. *Closely related to the Brigand, the Buckingham day bomber was intended to replace the Blenheim in heavy daylight raids on Germany. Changing strategy denied it this opportunity and current models are converted for transport duties.*

Munich Vintage. *Britain's first-line heavy bomber at the time of the Munich crisis, the Handley Page Harrow was obsolete at the outbreak of War. Here is a Harrow of No. 214 (B) Squadron. See R.A.F. Flashbacks on the opposite page.*

"Keystone" Photo.



Flying Wing Transport Prototype ?

FIRST in the field with a post-war tail-less aircraft is the Handley Page concern with their Manx, illustrated at the top of the page. It is widely agreed that the flying-wing layout offers the best solution for the design of a long-range passenger aircraft because of the lower structure weight, reduced drag, easier access for loading and the possibility of the installation of jet propulsive units in the wings. Handley Page's interest in transport aircraft is well known and the production of the Manx hints at a future flying wing transport by this firm.

The Manx prototype, with the experimental number H-0222, is powered by two D. H. Gipsy Major motors of 140 h.p. and has a span of 40 ft. Loaded weight is 4,000 lb., the speed about 150 m.p.h., and the service ceiling 15,000 ft. A pilot and one passenger is carried. Rudders are mounted at each wing tip and the ailerons also act as elevators and are known as elevons.

New Bristol Family.

Representing a logical development of the Beaufort/Beaufighter theme, the Brigand and Buckingham, seen in accompanying illustrations, and the Buckmaster, illustrated in the December issue, comprise a new family of Bristol types.

The Buckingham, Bristol 163, was originally designed as a day bomber to replace the Blenheim and supplement the Mosquito. The Beaumont bomber, designed in 1940 for twin Hercules, was abandoned in favour of the Buckingham with the emergence of the Centaurus motor and the issue of Air Ministry Specification B. 2/41, stipulating a crew of four. By the time the Buckingham was in quantity production, the need for an additional day bomber type with the R.A.F. had disappeared, so the design was adopted for use with Transport Command as a high-speed courier, carrying four passengers and a crew of three. Armour and armament was removed. The original Buckingham bomber mounted a Bristol B.12 dorsal turret with four machine-guns, four fixed machine-guns in the nose and two machine-guns in the ventral Bristol B.13 turret at the aft end of the navigator/air bomber's "bathtub." With two Centaurus IV motors, the Buckingham had a top speed of 330 m.p.h. at 12,000 ft. a service ceiling of 25,000 ft., and a full-load range at over 200 m.p.h. of over 2,000 miles. Bomb-load was 4,000 lb. The first prototype Buckingham was numbered DX 249 (this model had no "bathtub") and the second DX 225. Third and fourth prototypes were numbered DX 259 and DX 266. All were green and brown above and training yellow below.

One Buckingham Transport prototype was numbered KV 322 and was equipped experimentally with three fins. Production Transport versions are sea grey and green above and blue underneath and are numbered KV 335,

KV 336, KV 337, etc., and KV 471, KV 472, KV 473, etc.

The Brigand torpedo/fighter/dive bomber (to be featured in a future "Aeroplanes Described") was developed to Specification H. 7/42 and is replacing the Beaufighter T.F.X. with Coastal Command. Powered by two Centaurus 57 motors, it has a span of 72 ft. 4 ins., a loaded weight of 38,200 lb., a top speed of 358 m.p.h., a range of 2,770 miles, and a climb of 1,500 ft./min. With a crew of three it can carry a 22-in. torpedo, a pair of 1,000 lb. bombs or sixteen rocket projectiles in addition to four fixed 20 mm. cannon in the nose, and a single ·5-in. rear defence machine-gun.

The three prototype Brigands were numbered MX 988, MX 991 and MX 994. All were two shades of grey on top and sky type "S" below.

Barracuda Replacement.

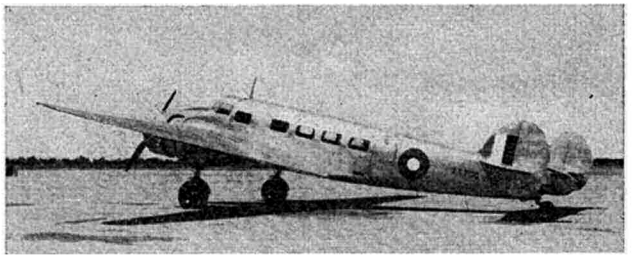
Fairey's replacement type for the well-tried Barracuda is the Spearfish, on show at Farnborough in November last. Reminiscent of the Grumman Avenger, the Spearfish has a 2,585 h.p. Centaurus 57 motor with a five-blade airscrew and a crew of two. Bombs or torpedoes are carried internally. With a span of 60 ft., a length of 45 ft. 4 ins., and a loaded weight of 24,000 lb., the Spearfish has a maximum speed of 301 m.p.h., and a range of 1,050 miles. Armament includes twin fixed ·50 guns forward and twin ·50 guns in a Nash and Thompson dorsal barbette. This latter was originally absent on the first prototype, RA 356, which is left the natural metal finish on all surfaces.

The Spearfish has power-folding wings and full provision for R.A.T.O.G. equipment. It is the largest and heaviest torpedo-bomber ever built for the Royal Navy. It is reported that the aircraft is suitable for dive-bombing up to 75 degrees at 300 m.p.h., using the Rotol braking airscrew.

R.A.F. Flashbacks—15.

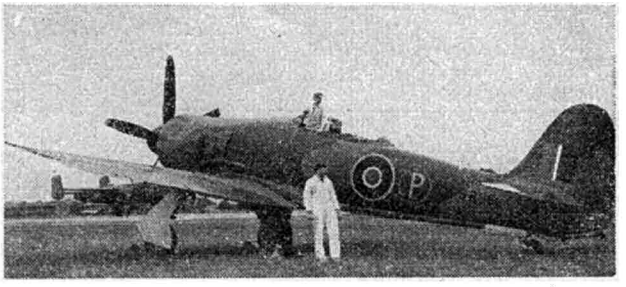
One of the key types in R.A.F. re-equipment during the Expansion period, the Handley Page 54 Harrow bomber first appeared in 1936 and reached the squadrons the following year, contemporaneously with the Whitley. The Harrow was obsolete in 1939 and was not used operationally in the war, but a few were retained for transport duties.

With two 925 h.p. Bristol Pegasus motors, the Harrow had a span of 88 ft. 5 ins., a length of 82 ft. 2 ins., a loaded weight of 28,000 lb., and a maximum speed of 200 m.p.h. Amongst the first R.A.F. types to be shadow-shaded, the Harrows were green and brown on top and black underneath, the serial number appearing in white beneath the wings. Roundels encircled in yellow appeared above the wings and on the fuselage. Harrows equipped Nos. 37, 75, 115, 214 and 215 (B) Squadrons and many of them bore the squadron number in the flight colour on the fuselage. Production Harrows were numbered K 6933, K 6934, K 6935, etc.



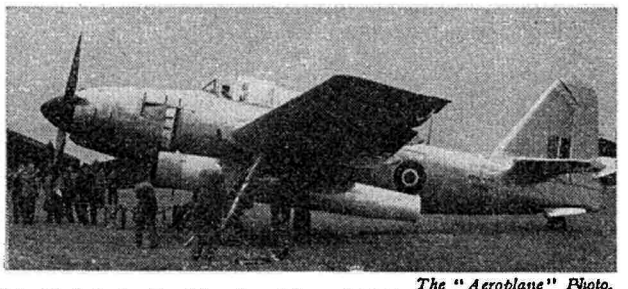
Peter M. Bowers Photo.

Lockheed Log. *This Lockheed 10, AX 700, was built in the first instance as an Electra airliner for Czechoslovakia. "Rescued" in 1939 it was flown to Great Britain and put on the strength of the R.A.F. Later it was flown to India as the Hon. Mr. Casey, Governor of Bengal's private aircraft, displaying S. E. Asia roundels.*



The "Aeroplane" Photo.

Naval Newcomer. *The prototype Hawker Sea Fury, SR 661, is a normal Fury fighter fitted with a stinger deck hook (visible just below the rudder). The land version of the Fury (a development of the Tempest II) is notably faster than its predecessor, with a top speed of 470 m.p.h. It is reported that the production Fury may revert to the Sabre in-line motor.*



The "Aeroplane" Photo.

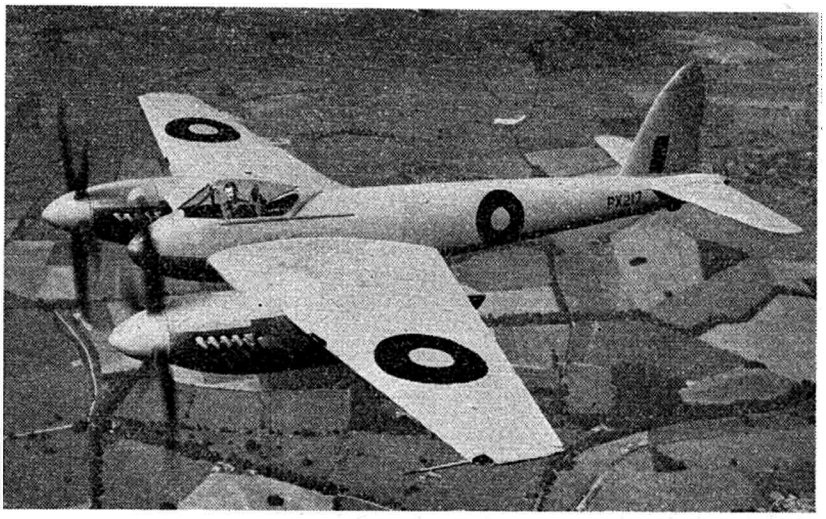
Fairey's Latest. *The Fairey Spearfish, on Exhibition for the first time at Farnborough last October, is scheduled to replace the Barracuda. This view illustrates well the capacious bomb-bay for internal torpedo, bombs or rockets.*

Plenty on the Ball. *Ryan's FR-1 Fireball fighter for the U.S. Navy combines a normal Wright Cyclone with a G.E.C. jet engine aft. Fireball has tricycle u/c folding wings, four 50 guns, two 1,000 lb. bombs and first equipped VF-66 Squadron just before Jap surrender.*

"Ryan" Photo.

AEROPLANES DESCRIBED XXXVI

THE DE HAVILLAND D.H.103 HORNET



(Right.) An early production Hornet fighter on a test flight.

Photo: Charles E. Brown.

DE HAVILLAND'S 103rd design, the Hornet, bears a considerable family resemblance to its famous predecessor, the Mosquito, but is a new design throughout with smaller overall dimensions. The Hornet was produced as a long-range twin-motor single-seat fighter capable of meeting single-motor fighters in combat on even terms due to its exceptionally high performance. The requirements of the Pacific theatre were obviously taken into consideration and Hornets were destined to play a major part against the Japanese if the war had continued. As events turned out it was just too late to go into action and joins the Vampire, Fury, Spiteful, Brigand and Lincoln in the "immediate post-war" category.

The De Havilland Company developed the Hornet concurrently with the Vampire jet fighter. The prototype Hornet made its first test flight on July 28th, 1944, at Hatfield, ten months after the first Vampire had flown and only one year after the start of design work. Mr. Geoffrey de Havilland was the test pilot on the initial flight and has been responsible with Mr. Geoffrey Pike for the development testing. Deliveries of the Hornet to the Royal Air Force commenced in February, 1945. It is the second two-motor single-seat fighter to serve with R.A.F. squadrons, the first being the Westland Whirlwind.

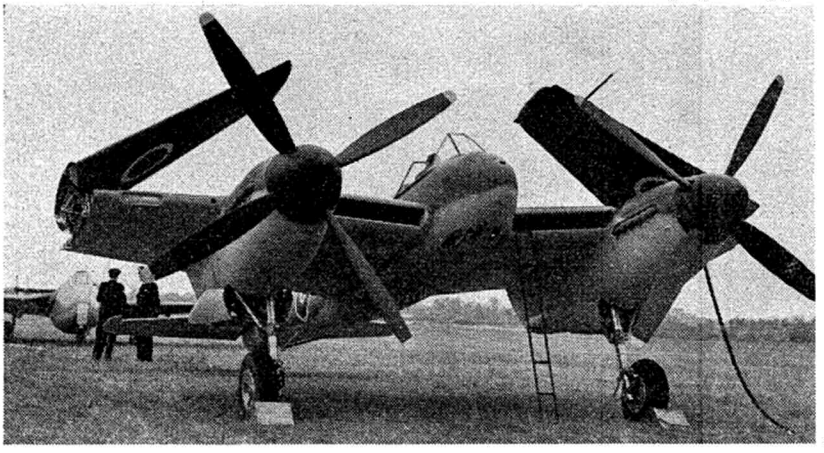
The very slender fuselage of the Hornet is of all-wood carapace construction like that of the Mosquito, but the wing is of composite construction with a double upper skin of plywood and an under skin of light alloy, with composite wood-metal spars.

The Hornet is powered by two Rolls-Royce Merlin liquid-cooled motors of 2,070 h.p. each, fitted with de Havilland four-blade airscrews. The port motor is a Merlin 130 (right-hand rotation) and the starboard motor a Merlin 131 (left-hand rotation).

With a maximum speed of over 470 m.p.h., the Hornet can claim to be the fastest airscrew-driven aircraft in regular service in the world. The Sea Hornet XX has been developed from the R.A.F. version and is in production at Heston Aircraft for the Royal Navy. The Sea Hornet (illustrated at the bottom of the page) differs principally in having hydraulically folding wings, "sting" type deck hook and R.A.T.O.G. equipment. The Sea Hornet has proved suitable for carrier operation. Armament consists of the four 20 mm. fixed cannon in the nose, as on the land version, with the addition of six pairs of rockets or two 1,000 lb. bombs.

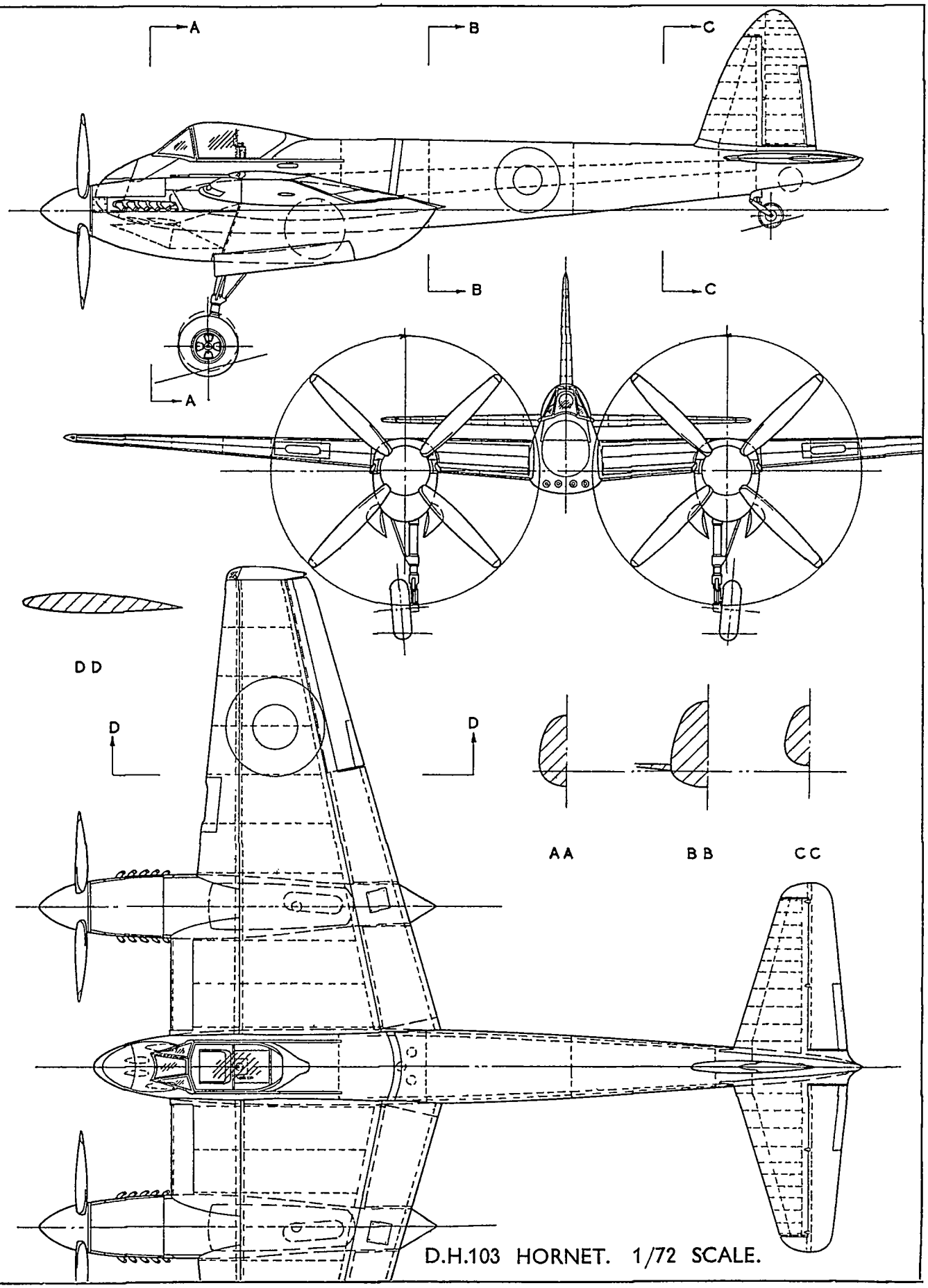
Production Hornets for the R.A.F. are camouflaged in azure blue on top and Mediterranean blue below. Service numbers are PX 217, PX 218, PX 219, etc. The Sea Hornet has standard Navy fighter camouflage.

"Aeroplane" Photo.



SPECIFICATION.—Span: 45 ft.; length: 34 ft. 6 ins.; Height: 14 ft. 2 ins.; Wing area: 361 sq. ft. Loaded weight: 18,250 lb. Max speed: 470 m.p.h. (Sea Hornet, 460 m.p.h.) Range (with extra tanks): 2,500 miles. Rate of climb: over 4,500 ft./min. Service ceiling: about 35,000 ft.

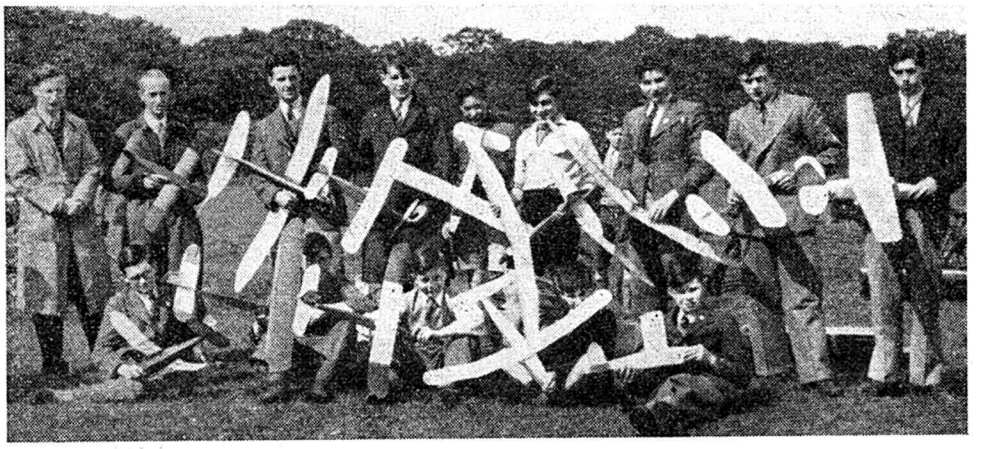
(Left.) A Sea Hornet XX of the Royal Navy, showing the wings in the folded position. The aircraft in the background is a Sea Vampire.



D.H.103 HORNET. 1/72 SCALE.

BY CLUBMAN

CLUB NEWS



This photograph of the Chingford Model Flying Club was taken on the wide open spaces of Chingford Plains at a recent meeting.

THE club movement is apparently going through a teething stage at the present moment, with a number of attendant snags making their appearance from time to time. This is evident from certain correspondence received at the A.M. offices, and I would like to deal with some of the questions asked by readers from time to time.

One of the eternal questions is—" Which is the better, to join (or form) . . . a small intimate club, or one of the large, highly organised affairs with huge membership, etc." Well, that's a tough one to tackle, as from my experience, both types have many advantages—also the inseparable disadvantages.

The big club has the undoubted advantage of a substantial income, which can (if properly managed) be used to expend still further the facilities offered to members, and in consequence attracts still greater membership from those who like to find everything " laid on." It is obvious also that the large membership usually means a better selection of officials to carry out the necessary work—which is one of the disadvantages of the small group, where it is found that one or two stalwarts have to carry the load alone.

The main stumbling-block of the big club, I find, is the way in which gradually the chummy intimacy of the original smaller group tends to vanish in the process of organisation attendant on expansion. This unfortunately has happened in a number of cases (with one or two notable exceptions), and in my personal opinion it is a regrettable failing in the large group.

From personal experience I am of the opinion that the future of club life lies with the small club comprising a number of enthusiasts operating in a compact area, PROVIDING that they do not keep themselves to themselves, and co-operate to the best of their ability with all other clubs in the vicinity. This last requirement is vital, as the club movement relies almost entirely on the friendly competitiveness of allied groups, and the " lone club " is just as much at a disadvantage as the " lone hand." Inter-club spirit is the thing I wish to see encouraged, and for that fact alone I am delighted to see the ever-increasing number of new model aero clubs now coming into being.

A recent issue of the Argentine aeronautical paper, " Mundo Aeronautico," prompts me to start brushing up what little Spanish I never knew! My eyes popped when I spotted an article annotated " por Clubman " ! ! However, a long session with a dictionary proved that my jealously guarded *nom de plume* was not being used disrespectfully, but had been adopted by the Argentinian writer as very applicable to the article he wished to put across. Was I flattered ! ! !

Times given for a series of contests recently held there show a fair comparison with results in this country. Roberto J. Perez won the Categoria A. Planedores (Gliders) with a time of 13 : 9, followed by Jorge A. Arrues 11 : 42, and Carlos J. Arrues 11 : 8. Times from then onwards were average to the bottom man, number 17, who scored only 25 seconds.

Categoria B. Motor a Goma (rubber to youse mugs) went to Jazan Perahia with a time of 4 : 41, second man Ronulo Munoz scoring 4 : 28, and Alberto F. Sandham 2 : 30. The class C. event—Motor a Explosion (you don't want that translated, do you ?) again went to Jazan P. with 1 : 52, the only other competitor being Rolando Taurini Jaurez with 1 : 50. These boys are apparently as keen as their Engish contemporaries, and I trust the figures given here are of interest to those of you who like to keep in touch with the movement outside your own boundaries.

The dinner held by the S.M.A.E. on the 1st of December last was a very enjoyable affair, and attended by well over 100 members. I was particularly pleased to see so many visitors from the North and other areas, and spent a good time reminiscing and wisecracking with many of the " old brigade." The long list of speeches was notable for two amusing contributions from Messrs. M. R. Knight and Silvio Lanfranchi, and I am now looking forward to the Annual Dinner to be held in February. The old days are making a " come-back."

Three requests are in this month from overseas readers, all asking to be put in touch with fellow enthusiasts in this country with a view to opening up correspondence. The chaps in question are: J. Neelan, of 225, Chestnut Street, Pittsburgh (18), Pa., U.S.A.; A. J. De Laine, Winkie P.O., South Australia (aged 18); and R. Rutledge, 203, Princes Highway, Dapto, South Coast, N.S.W., Australia.

It is proposed to revive the St. Albans M.A.C., and all past members and new prospects are asked to communicate with the secretary via Mr. R. Seabrook, 40, Church Street, St. Albans, Herts.

The BARNES & D.M.A.S. have now recommenced activities after the " duration " break, with headquarters as before. It has been agreed that all present officers shall officiate until February 5th, when the first regular re-opening meeting will be called for re-election of officers and all other business. Will all those interested please communicate with the secretary, Mr. W. Cumber, 41, Victoria Road, Mortlake, S.W.14 ?

Much enthusiasm is being shown in the NORTHAMPTON M.A.C. for rocket models, R. Goodman having successfully demonstrated his rocket-propelled semi-scale He. 162 on a number of occasions. He is also testing a speed model (rocket assisted) incorporating laminar flow wings. Mr. Knight is also experimenting with a 16-in. span " Vampire," but is experiencing trouble with his rocket units. Latest club meetings have shown a steady increase in numbers, and Mr. E. W. Evans was welcomed back following his demob.

A couple of members of the OXFORD CIVIL DEFENCE M.A.C. tried their hands at rocket propulsion recently, when they tied a firework to a " Cruiser Pup," which surprisingly went up very well. Unfortunately, the rocket happened to be of the type that send out coloured starts at the end of the run—'nough said ! This club has a good scheme that I recommend to all other groups. A few of the members visit a ward of the local hospital each week and demonstrate r.t.p. flying, etc., and assist the inmates with their modelling problems. Some of the fellows have made very good models even though bedridden, and the visitors are doing a good job in keeping these lads interested in this somewhat unorthodox manner.

The PAISLEY & D.M.A.C. now has a membership of over fifty, which is very good going considering the short time they have been organised. Club records to date are :

Rubber ..	..	3 : 50
Gliders ..	..	1 : 20

A Setchfield, of the WILLESDEN & D.M.A.C., has been in record-making mood lately, raising the club open glider record to 5 : 20 o.o.s., and setting a new r.t.p. tail-less duration figure of 46 secs. Indoor flying and general building now take place each Tuesday and Thursday evenings at the Chamberlain Road School.

GREAT YARMOUTH M.A.C. recently ran off the finals of the " Avion Glider Trophy Contest," and some excellent flights were seen. J. Mannell, the club record holder, with a total of 179 points, was confident of an easy victory, but a couple of juniors in the shape of S. Daniels and T. Andrews soon put paid to his account, Daniels finishing the winner with 265 points, with Andrews second with 239. Nice work, kids !

The WHITEFIELD M.A.C. still go strong, though contest work has fallen off lately. However, indoor flying is receiving more attention, and the latest list of records shows a lot of new figures for this type of model. Records are :—

Indoor Class A.	(H.L.)	K. Bennett	1 : 04·5
	(R.O.G.)	K. Bennett	1 : 02·5
Class B.	(H.L.)	N. Wakefield	1 : 03
	(R.O.G.)	N. Wakefield	1 : 05
Outdoor Glider.	(H.L.)	E. G. Bartle	1 : 10
	(T.L.)	E. G. Bartle	2 : 55

Heard the latest definition of a " Northern Area Thermal " ? It's a patch of still air entirely surrounded by down currents !

Fun and games were experienced at the ISLINGTON

M.A.C. indoor meeting recently, when Mr. Drake began experiments with his rocket propelled r.t.p. model. Everyone stood well back " just in case." The expected (or unexpected) happened, for the rocket, instead of burning normally, just blew up with a terrific bang. End of model ! ! A number of the older members are busily engaged on building petrol models, following the promise of 3·5 c.c. engines in the early part of 1946. (No details given as to source of supply !)

The old Torquay & D.M.A.C. has changed its title to the TORQUAY MODEL AERO CLUB. New records to date are: Winch-launched glider, 9 : 44·5 o.o.s. by J. Higgin's " Trooper," and a new r.t.p. figure of 1 : 58 by G. Wilde. E. J. Taylor won the club " Eagle Trophy " for r.t.p. flying with an aggregate of 3 : 39 for three flights, Wilde coming second with 3 : 15·5 and R. Drew third with 3 : 13·5. Not bad flying that, in any club.

Another club to supply a list of the last season's records is the WEST COVENTRY M.A.C., and these, considering it was the club's first season, the weather and surrounding terrain, are considered quite good. List is as follows :—

Wakefield	(H.L.)	P. Pritchard	1 : 09
Open Rubber	(H.L.)	F. E. J. Wintle	4 : 16 o.o.s.
Open Glider	(H.L.)	F. E. J. Wintle	1 : 53
Lightweight	(H.L.)	R. Gunn	1 : 06

There was a good turn out for the MERSEYSIDE M.A.S. first indoor flying meeting of the winter. R.T.P. flying was in progress most of the evening, best times as follows :—

D. R. Hughes	..	68	65 & 94·5 secs.
W. A. Jackson	..	59	68·8 & 46·2 ,,
T. Comber	..	52·7	62·5 & 67·6 ,,
A. O. Sutcliffe	..	75·1	108 & 122·1 ,,

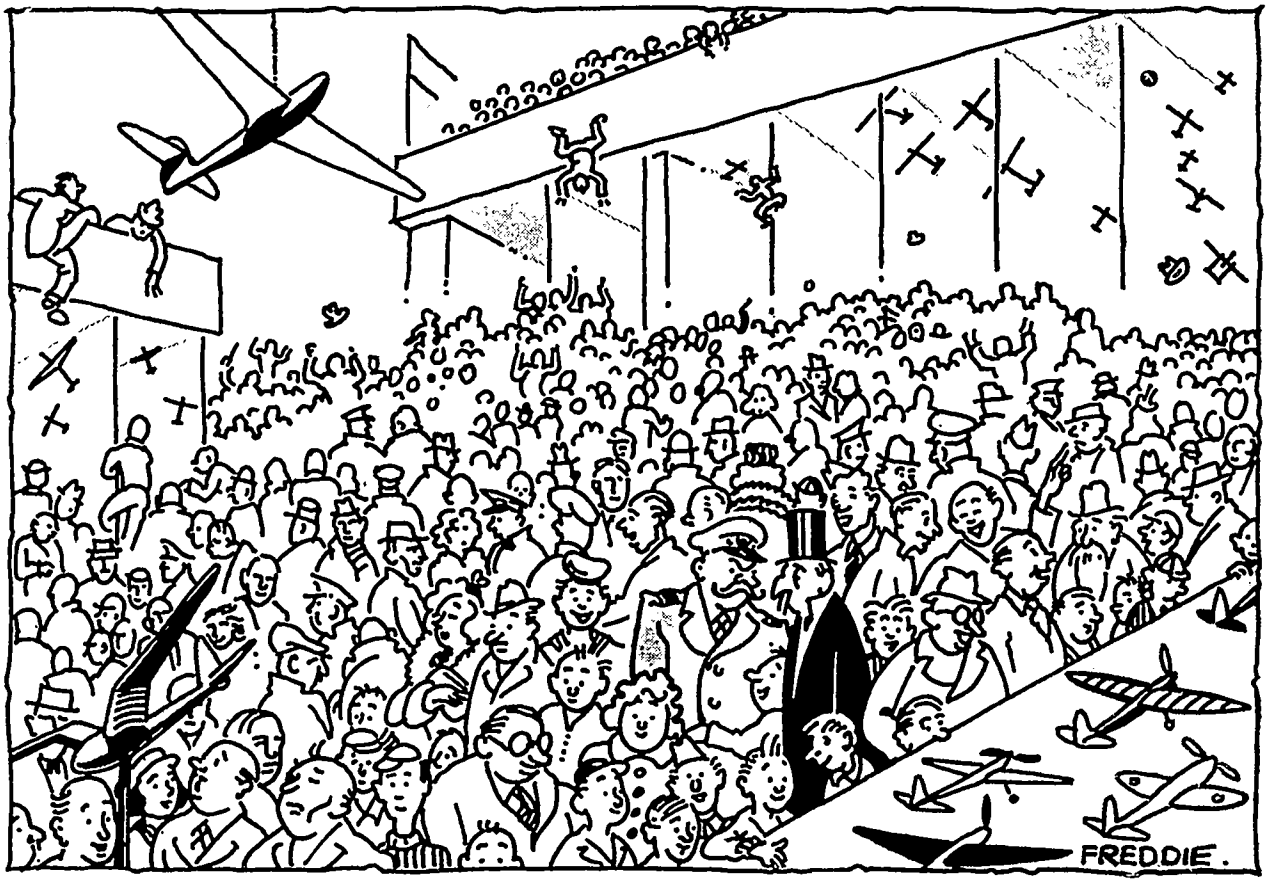
Small free-flying models of the non-duration type were also very much in evidence, and some amusing flights were witnessed.

The latest issue of the BLACKPOOL & FYLDE M.A.S. magazine hints at trouble in the camp, presumably owing to the old story of members leaving all the work to one or two enthusiasts, who in time wonder why they have to carry the can for everyone. Pity ! because this club seemed all set to go places. Only three members turned out for the Northern Area November contest for H.L. duration, C. J. Davey aggregating 3 : 08·5 for three flights. (Incidentally, W. A. Gradwell—author of the crossword puzzle—you are wrong with 22 and 32 across ! Dick Korda is the present holder of the Wakefield Trophy, not Frank Zaic. O.K. ?)

The club glider record of the HENLEY M.F.C. has been steadily going up during last season, and now stands to the credit of J. Crook with a time of 3 : 01. There is a general drift to the rubber-driven duration type of model now that rubber is reappearing. Where ? ?

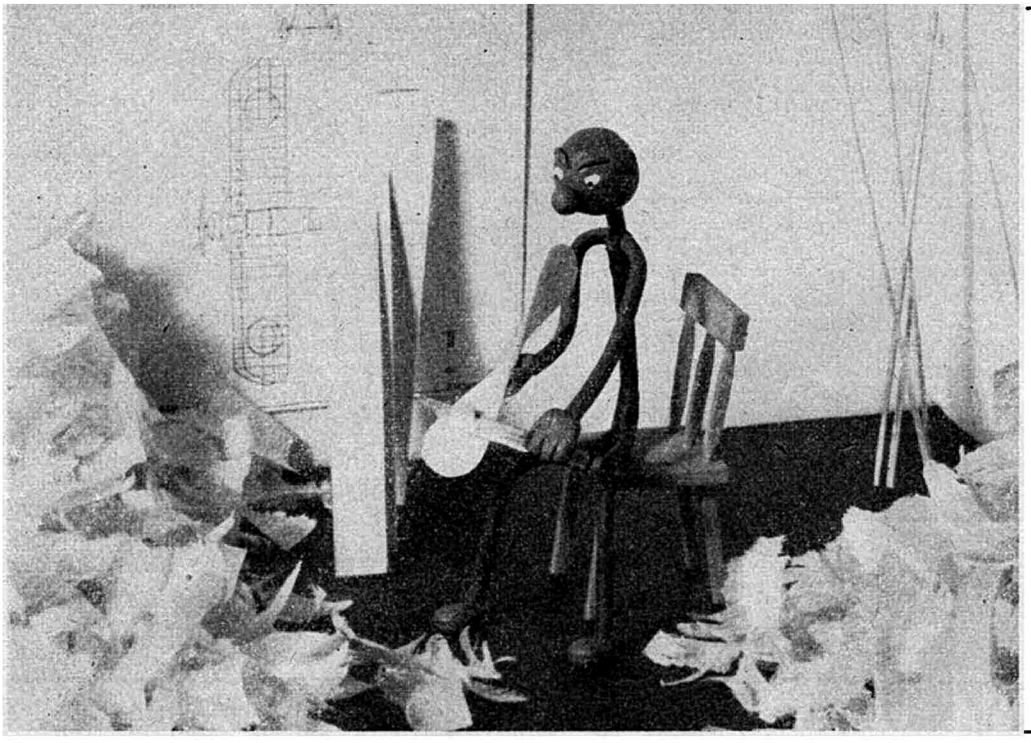
COVENTRY M.A.C. have collected two new cups for contest work, one for seniors and one for juniors. Both these are for indoor flying, and R. Toms has been getting his hand in well and truly, putting up the club r.t.p. record to 2 : 03·2.

Some good times were put up last season by the



" DO YOU THINK THAT MODEL AEROPLANES WILL EVER REALLY BECOME POPULAR ? "

BEN TWYRE • By J. H. MAXWELL



Some fellers Carve propellers.

Others think the job a bore,

And buy theirs from a model store.

WALTHAMSTOW M.A.S., notable being the flights made by R. Newman and E. Aylward in the S.M.A.E. Cup. Newman's time was 12 : 40, while Aylward set up 11 : 31 —good times, methinks.

G. S. Tynan-Blundun, of 22, The Avenue, Romford, Essex, wishes to get in touch with Messrs. F. Dyer and H. Patterson, whom he knew before going overseas. He is also desirous of getting a club started again in his district, so go to it any Romfordites who want a local group.

Another proposal to reform a pre-war club is from J. T. Walker, 86, Cleveland Avenue, Darlington, who wishes all old members (and prospective newcomers) of the Darlington club to get in touch with him at the earliest opportunity.

Other chaps wishing to form clubs in their areas are the following: J. Rimmo, Caldside, Greenlaw, Berwickshire; K. Shaw, 35, Sandown Street, Abbey Hey, Gorton, Manchester 18; D. Hine, 50, Poundfield Road, Minehead, Som.; P. F. Hunter, 30, Station Road, Lower Parkstone, Dorset.

And that's that for another month, apart from another healthy batch of new clubs listed below. Here's hoping that 1946 sees a quick return of rubber and other essentials to organised model flying, not forgetting that most rare commodity—fine and calm weather! All the best in your flying, and may your models stay up for hours, but never get lost. Wot—no thermals?

THE CLUBMAN.

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1944. June, July, August, September, November, December.

1945. June, July, September, October, December.

NEW CLUBS

NEWHAVEN BOYS' CLUB (Model Flying Section).
A. C. Marshall, 60, First Avenue, Newhaven, Sussex.

DOVER M.A.C.
B. J. Paige, 31, Cherry Tree Avenue, Dover, Kent.

SKYRANGERS M.A.C.
M. Spinks, 74, Queen's Road, Loughton, Essex.

NEWCASTLE M.A.C.
G. R. Hosking, 3, Grosvenor Place, Jesmond, Newcastle-on-Tyne.

278 SQN. A.T.C. (Wembley M.A.C.).
D. J. Brown, 6, Canterbury Terrace, Harrow Road, Wembley, M'sex.

BECKENHAM M.A.C.
A. C. Twine, 61, Queen Anne Avenue, Bromley, Kent.

MOONRAKERS M.A.C.
G. A. Janes, c/o Fruit Farm, Bromham, Nr. Chippenham, Wilts.

SEVENOAKS M.A.S.
W. J. Rann, 1, Greenwood Way, Kippington Road, Sevenoaks, Kent.

SECRETARIAL CHANGES

BLACKPOOL & FYLDE M.A.S.
V. Bentley, 8, Crompton Avenue, Hawes Side Lane, Blackpool.

LOUGHBOROUGH COLLEGE M.A.C.
G. R. Scott, Loughborough College, Loughborough, Leics.

NORTHERN HEIGHTS M.A.C.
H. R. Turner, 61, Avenell Road, Highbury, N.5.

SOUTHAMPTON M.F.C.
P. Shepherd, 66, Norfolk Road, Shirley, Southampton.

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All entries on the form and the entrant's name and address must be written in ink or typewritten.

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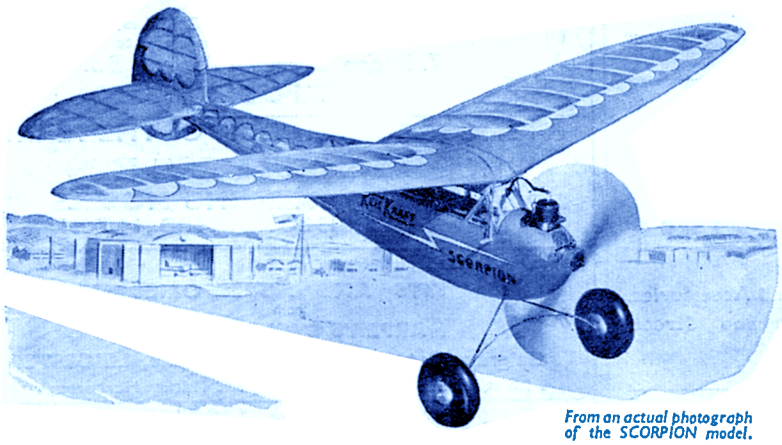

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