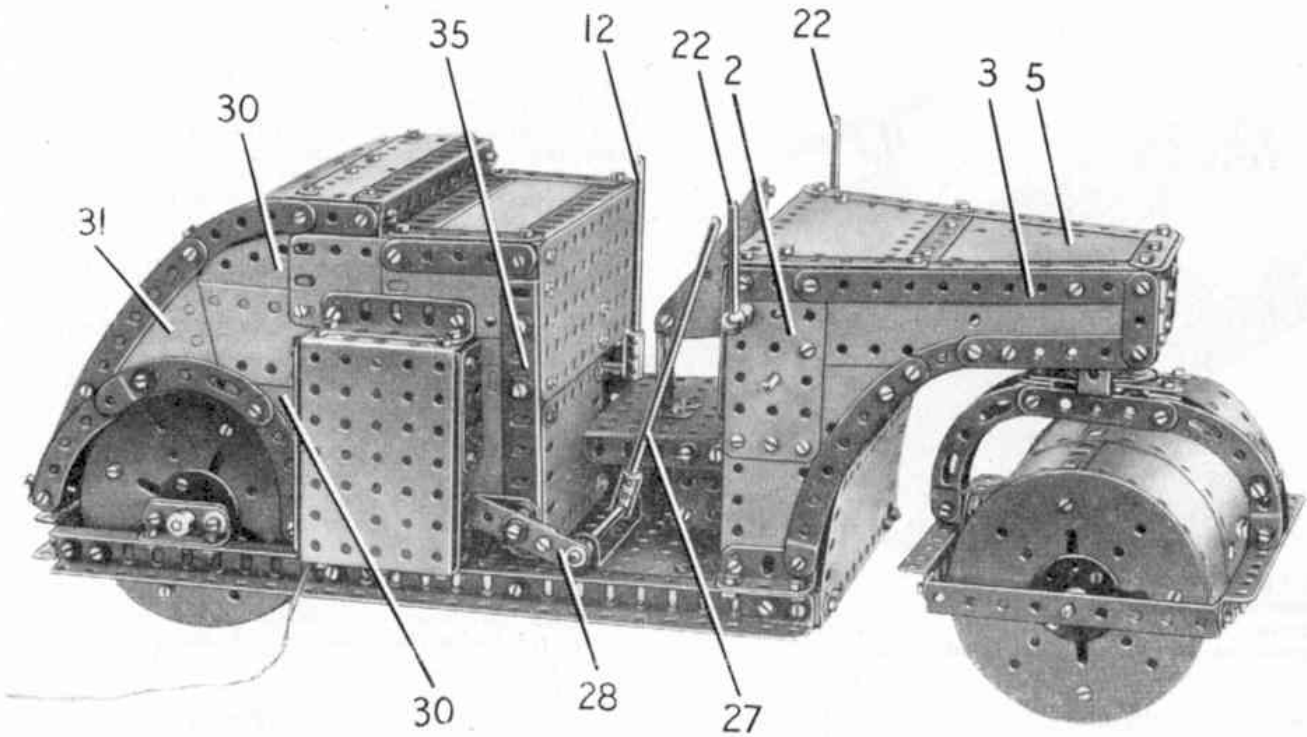

New Meccano Model

Tandem Road Roller

EACH side of the chassis of the model consists of two 12½″ Angle Girders bolted together to form a channel girder. These girders are connected by 1″×1″ Angle Brackets at each end to further channel girders, made from 5½″ Angle Girders. The chassis is plated by a 5½″×2½″ Flat Plate and two 5½″×3½″ Flat Plates, which are bolted to one of the 5½″ channel girders and to two 5½″×½″ Double Angle Strips fixed between the chassis side-members.

The raised or swan-necked section of the chassis above the rear steering roller is made by bolting a 5½″×2½″ Flanged Plate 1 in the position shown. A 2½″×1½″ Flexible Plate is bolted to each side flange of the Plate 1 and is connected to the chassis by a 1½″ Angle Girder. The Flexible Plate is extended upward by a 3″×1½″ Flat Plate 2, to which a horizontal 5½″×1½″ Flexible Plate is bolted. The top edges of the Flexible Plate and the Plate 2 are strengthened by two 5½″ Strips 3 overlapped nine holes. A 3″ Strip is bolted to the lower edge of the 5½″×1½″ Flexible Plate and is joined to the 1½″ Angle Girder by a 4″ Stepped Curved Strip extended by a 2½″ Curved Strip. A 2½″×2″ Triangular Flexible Plate is bolted between the Plate 2 and the Curved Strips.

Fig. 1. This fine Diesel Road Roller is driven by an E20R type Electric Motor. A novel feature of the model is the power-operated steering mechanism.

The ends of the Strips 3 and the 3″ Strips are connected by a 2½″×1½″ Flanged Plate 4. The cover over this part of the model consists of two 4½″×2½″ Flexible Plates overlapped lengthways by four holes, with another 4½″×2½″ Flexible Plate 5 bolted to them at right angles. A 2½″×1½″ Triangular Flexible Plate is fixed along each side of the Plate 5. The cover is edged at its narrow end by a 2½″ Strip, along each side by a 4½″ and a 3″ Strip and at its wide end by a 5½″ Angle Girder. A 5½″×2½″ Flat Plate is bolted to the vertical flange of the Girder. The cover is attached to Angle Brackets bolted to the Plates 2 and 4, but it should not be fixed in place until the steering mechanism is assembled.

An E20R Electric Motor is attached to the chassis by four ¾″ Bolts, but is spaced from it by two nuts on each Bolt. A ½″ Pinion on the Motor shaft drives a 57-tooth Gear on a 2½″ Rod supported in the side-plates. At the opposite end of the Rod to the Gear a ½″ Pinion is fitted,

and this is arranged to mesh with a 1″ Gear 6 by adjusting the nuts on the ¾″ Bolts used to fix the Motor to the chassis. A Worm is fixed on the 2½″ Rod between the Motor side-plates.

The Gear 6 is fixed on one end of a 5″ Rod, which is supported in the Flanged Plate 1 and in a 1″×1″ Angle Bracket spaced from the chassis by two Washers on each of two bolts. The 5″ Rod carries at its other end a Worm 7. The Worm on the 2½″ Rod mounted in the Motor side-plates drives a 1″ Gear on a 2½″ Rod 8. This Rod is free to slide in two 2½″×1½″ Flanged Plates bolted to the chassis and connected at their upper ends by two 1½″ Strips. A 1½″×½″ Double Angle Strip 9 is fixed to the Strips.

Rod 8 carries a 1″ Gear 10 and a ½″ Pinion 11, and its sliding movement is controlled by a lever 12. This is a 3½″ Rod held in a Coupling, which is fixed on a 4″ Rod mounted in Double Angle Strip 9. A Crank on the 4″ Rod is extended one hole by a 2″ Strip, and a ¾″ Bolt fixed in the Strip by two nuts is located between the Gear 10 and the Pinion 11. The 4″ Rod is held in place by a Collar, with a Compression Spring between it and the lug of Double Angle Strip 9.

A ½″ Pinion is free to turn on a ¾″ Bolt, which is fixed in one of the 2½″×1½″ Flanged Plates by two nuts. A 2″ Rod is mounted in the Flanged Plates, and is fitted with a 1″ Gear 13, a ½″ Pinion 14 and a ¾″ Sprocket 15. The Sprocket 15 is connected by Chain to a ¾″ Sprocket on a 1″ Rod. This Rod is supported in a Trunnion and a Flat Trunnion bolted to the chassis, and it carries a ½″ Pinion that drives a Gear Ring attached to the driving roller.

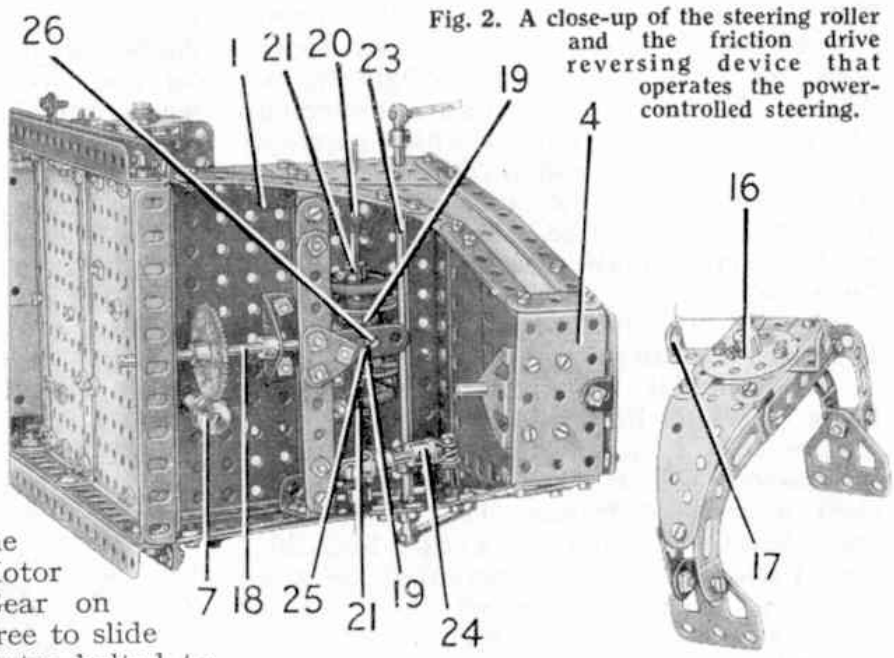

Fig. 2. A close-up of the steering roller and the friction drive reversing device that operates the power-controlled steering.

The roller is made by bolting four 4½″×½″ Double Angle Strips between two 4″ Circular Plates, with a spacing Washer on each bolt. It is plated by four 5½″×2½″ Flexible Plates and two 1 11/16″ radius Curved Plates, which are held by nuts on bolts passed through the Double Angle Strips and fixed in them by nuts. The Gear Ring is spaced from the roller by four Washers on each of the ⅜″ Bolts that holds it in place.

A Bush Wheel bolted to each Circular Plate is free to turn on a 6½″ Rod fixed at each end in a Double Arm Crank, which is connected to the chassis by a 1½″ Angle Girder.

The steering roller is made in the same way as the one already described, but its Bush Wheels are fixed on 1″ Rods mounted in two 4½″×½″ Double Angle Strips. These are connected by 5½″ Angle Girders, to which Flat Trunnions are bolted. Each Flat Trunnion is lock-nutted to a Double

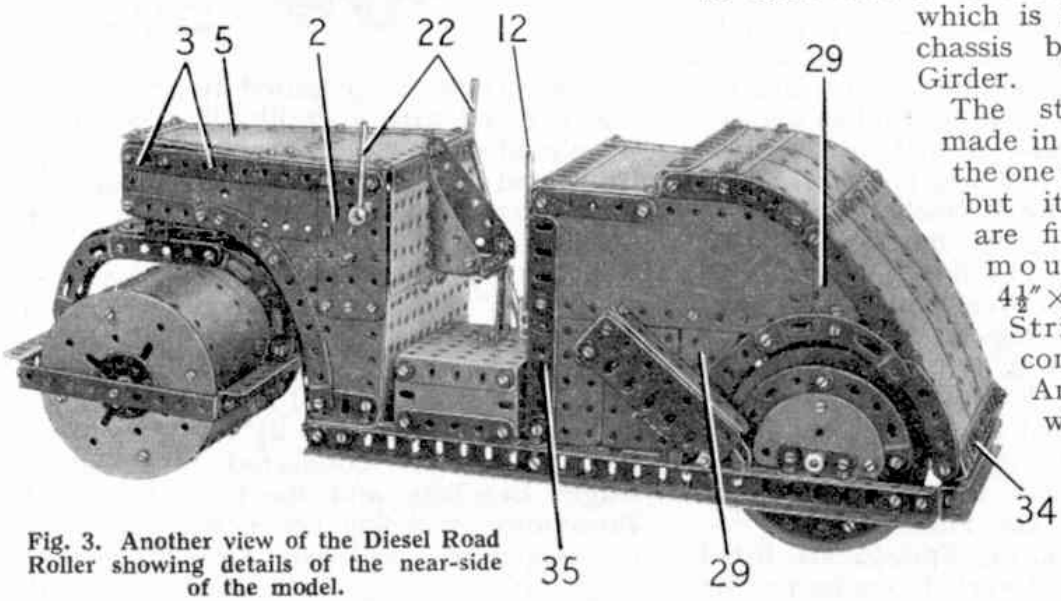

Fig. 3. Another view of the Diesel Road Roller showing details of the near-side of the model.

Bracket that supports two 3″ Stepped Curved Strips spaced apart at their upper ends by a $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip. The two Double Angle Strips are connected by four $2\frac{1}{2}''$ Strips, two of which support a Bush Wheel 16 and a $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strip 17. A 2″ Rod fixed in the Bush Wheel is mounted in Trunnions bolted to the Flanged Plate 4 and is held in place by a Collar.

The Worm 7 drives a 57-tooth Gear on a 3″ Rod 18, mounted in the chassis and in a Trunnion bolted to the Flanged Plate 1. The Rod is held in place by Collars and it carries at its upper end a $\frac{3}{4}''$ Contrate. This Contrate meshes with each of two $\frac{3}{4}''$ Pinions 19 placed with their bosses inwards on a $6\frac{1}{2}''$ Rod 20. The Pinions are freely mounted on the Rod, but each is connected to a Wheel Disc (8-holes) by four bolts fixed in the Wheel Disc by nuts. The nuts are arranged so that one corner of each engages between two of the teeth of the Pinion.

A Compression Spring is placed between each Wheel Disc and a 1″ Pulley 21 fitted with a Rubber Ring. These Pulleys are fixed on the Rod 20, and by sliding one of the Pinions 19 the bolt heads of one of the Wheel Discs are pressed against the Rubber Ring of the corresponding Pulley. This completes a friction drive to the Rod 20. When the first Pinion is released and the second is moved the other Wheel Disc engages its Pulley and completes the drive as before, but in the opposite direction.

The sliding movement of the Pinions 19 is controlled by twin levers 22, each of which is a 2″ Rod held in a Handrail Coupling fitted at one end of a $6\frac{1}{2}''$ Rod 23. A Crank is fixed on the Rod and is connected by a $\frac{3}{8}''$ Bolt to an End Bearing 24. This is joined by a $1\frac{1}{2}''$ Rod to another End Bearing, which is lock-nutted to a 2″ Strip bolted to one arm of a Bell Crank 25. The Bell Crank is freely mounted on a Pivot Bolt fixed by its nuts in a 1″ Triangular Plate. The latter is supported by two $4\frac{1}{2}''$ Strips overlapped eight holes and bolted to the lugs of $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips fixed to the Plates 2. A $\frac{3}{8}''$ Bolt 26 is passed through the Bell Crank, and on it are placed three Washers before it is screwed tightly into a Threaded Boss. The Threaded Boss is located between the inner faces of the Pinions 19.

Two Cord Anchoring Springs are fitted on the Rod 20 and each is connected by a length of Cord to one lug of the Double Angle Strip 17. The Cords are wound on the Rod in opposite directions, and when the levers 22 are operated the steering roller is turned to steer the model through the action of the Cords winding on the Rod 20.

The Electric Motor switch is controlled by a lever 27, formed by a 5″ Rod in a Coupling. The Coupling is fixed on a $3\frac{1}{2}''$ Rod, which is held by a Collar in a $2\frac{1}{2}'' \times \frac{1}{2}''$

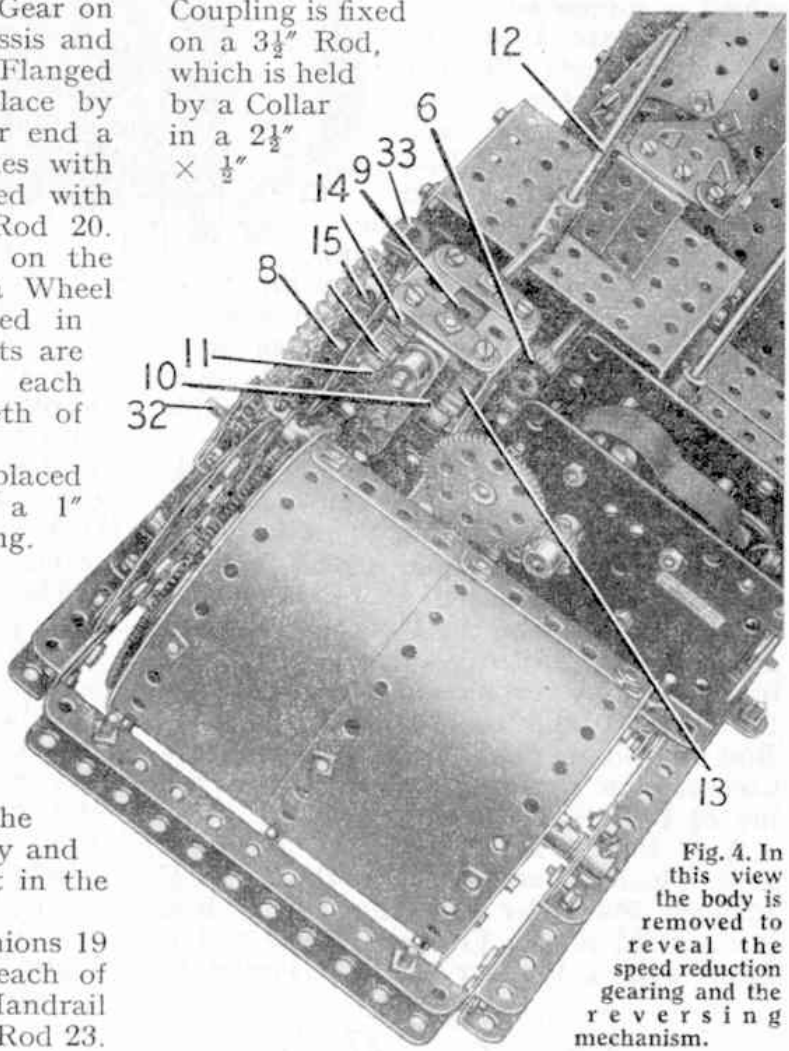

Fig. 4. In this view the body is removed to reveal the speed reduction gearing and the reversing mechanism.

Double Angle Strip bolted to the chassis and is fitted with a Crank 28. The Crank is extended by a 2″ Strip, and this is connected by a $1\frac{1}{2}''$ Strip to one arm of the switch. The bolts that join the Strips to the arm are fitted with lock-nuts.

The platform under the driver's seat is a $3\frac{1}{2}'' \times 2\frac{1}{2}''$ Flanged Plate supported at one side by a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate and a $2\frac{1}{2}''$ Angle Girder, and at the other side by a $1\frac{1}{2}''$ Flat Girder and an Angle Bracket. The seat consists of two $2\frac{1}{2}'' \times 2''$ Triangular Flexible Plates connected by Obtuse Angle Brackets and fixed to two Flat Trunnions by Angle Brackets. The seat is supported by two $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips. *(Continued on page 102)*

Dew-Ponds—(*Continued from page 59*)

determine the kind of weather conditions most helpful to the replenishment of dew-ponds. A Berkshire farmer, for instance, kept a careful check on one of his ponds for this purpose. During five summer nights of misty weather the water in the pond rose by seven or eight inches over its previous level. Then he measured again over five nights when there were no mists, but rather heavy dew. This time the rise in the water level was less than three inches.

Some writers have declared that the dew-pond was unknown until the eighteenth century, but there seems little doubt that this method of making an artificial water supply where none exists naturally is of ancient origin. The remains of fortified camps and earthwork towns along the chalk heights of southern England remind us that these hilltops were inhabited by communities long before any villages or towns grew up in the valleys below. Such communities must have devised means of water supply both for domestic purposes and for watering their flocks and herds. The pond of puddled chalk or clay would seem to have been the obvious solution.

It is extremely difficult to distinguish between ancient and modern dew-ponds, and it is highly improbable that any have survived from early times. Nevertheless, the ponds existing near such prehistoric camps as Cissbury Ring in Sussex and Bradbury Rings in Dorset, and perhaps some on Salisbury Plain, may well occupy the sites of those cut by the hill-dwellers of long ago.

Visiting the lonely, half-forgotten hill ponds today, it is fascinating to speculate on such theories and to recall the significant part they have played in the story of our agriculture. Without the dew-ponds it would have been impossible to raise the great downland flocks of sheep which contributed so much to this island's progress and well-being.

"Stringbags" to Swift—(*Continued from page 62*)

Spitfire-Seafire-Spiteful-Seafang family of piston-engined fighters, ashore and afloat.

Little wonder that he enjoys his work. After all, what other job offers a man the satisfaction of travelling faster, officially, than anybody else in the world, as he did in September 1953; or of meeting and performing before Kings, Presidents and hundreds of thousands of their subjects in half a dozen countries in almost as many days? Of course, Mike Lithgow probably would not put it in those words. In *Mach One* he comments simply that: "Having got into the groove of test flying, any other sort of occupation seems unthinkable . . . . . So come on you future test pilots."

New Meccano Model—(*Continued from page 90*)

The general arrangement of the engine cover can be seen clearly in Figs. 1 and 3. At one side two 2½″ × 1½″ Triangular Flexible Plates 29 are used in the plating, and on the other side two similar Triangular Flexible Plates 30 and a 2½″ × 2″ Triangular Flexible Plate 31 are fitted. The sides and top of the cover are connected by Angle Brackets.

The guard over the chain drive is attached to a ½″ Corner Angle Bracket 33. The 5½″ Angle Girder 34 at the front of the cover is fitted over ⅜″ Bolts held in the chassis by nuts, and the 4½″ Angle Girders 35 are connected to the chassis by Angle Brackets.

Parts required to build the Tandem Road Roller: 5 of No. 2; 4 of No. 2a; 2 of No. 3; 4 of No. 4; 9 of No. 5; 3 of No. 6; 8 of No. 6a; 4 of No. 8; 11 of No. 9; 2 of No. 9a; 2 of No. 9d; 4 of No. 9f; 7 of No. 10; 2 of No. 11; 15 of No. 12; 5 of No. 12a; 2 of No. 12b; 2 of No. 12c; 3 of No. 14; 2 of No. 15; 1 of No. 15b; 3 of No. 16; 2 of No. 16a; 4 of No. 17; 1 of No. 18a; 3 of No. 18b; 2 of No. 22; 5 of No. 24; 2 of No. 24a; 2 of No. 25; 5 of No. 26; 2 of No. 27a; 1 of No. 29; 4 of No. 31; 2 of No. 32; 377 of No. 37a; 309 of No. 37b; 142 of No. 38; 1 of No. 40; 7 of No. 48; 2 of No. 48a; 2 of No. 48b; 10 of No. 48c; 2 of No. 48d; 2 of No. 51; 52 of No. 52; 2 of No. 52a; 2 of No. 53; 7 of No. 59; 3 of No. 62; 2 of No. 62b; 2 of No. 63; 1 of No. 64; 3 of No. 70; 3 of No. 73; 1 of No. 77; 2 of No. 89; 6 of No. 89a; 2 of No. 89b; 8 of No. 90; 2 of No. 90a; 1 of No. 94; 2 of No. 96a; 1 of No. 103d; 1 of No. 103f; 1 of No. 103g; 1 of No. 103h; 1 of No. 111; 2 of No. 111a; 16 of No. 111c; 3 of No. 120b; 4 of No. 126; 5 of No. 126a; 1 of No. 128; 3 of No. 136a; 4 of No. 146a; 1 of No. 147b; 1 of No. 154b; 2 of No. 155; 2 of No. 166; 2 of No. 176; 1 of No. 180; 9 of No. 188; 4 of No. 189; 1 of No. 190a; 3 of No. 191; 13 of No. 192; 6 of No. 200; 1 of No. 214; 7 of No. 221; 5 of No. 222; 1 E20R Electric Motor.

A FINE L.M.R. MIRROR

The mirror on the compartment partition has been a familiar and much appreciated feature of British Railway coaches for many years. A recent London Midland development, at present in the experimental stage, has been the installation of mirrors on which, without reducing their effectiveness, a clear map showing London Midland routes is shown. We have received one of these mirrors, and found it admirable and effective.

We have also received a striking coloured poster showing L.M.R. express passenger and coal trains, both electric hauled, in a characteristic Pennine setting on Britain's first electric main line, between Manchester and Sheffield. The poster draws attention in a very effective way to the electrification and equipment of the busy line that once formed part of the Great Central Railway.

AIR-BRITAIN

Readers who are keen on aeroplanes will be interested to learn of Air-Britain, a National Association founded in 1948 to cater solely for aviation enthusiasts, and now having a world-wide membership. It is open to all aviation enthusiasts, irrespective of age or sex. The membership fee is 5/- a year.

The organisation includes a London headquarters and some 20 specialist agencies, that cover the whole range of aviation endeavour from Aerodynamics to the Registration of Aircraft. Each agency is run by what Air-Britain calls a Data Specialist, an expert of experts in his particular field, whose duties include the answering of letters from members, cataloguing of new facts, and production of bulletins, pamphlets, photographs, etc.

Air-Britain is responsible for several excellent aviation publications, and details of these, together with an enrolment form, can be obtained from Mr. D. K. Fox, Honorary General Secretary, Air-Britain, 31 First Avenue, Acton, London W.3.

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