

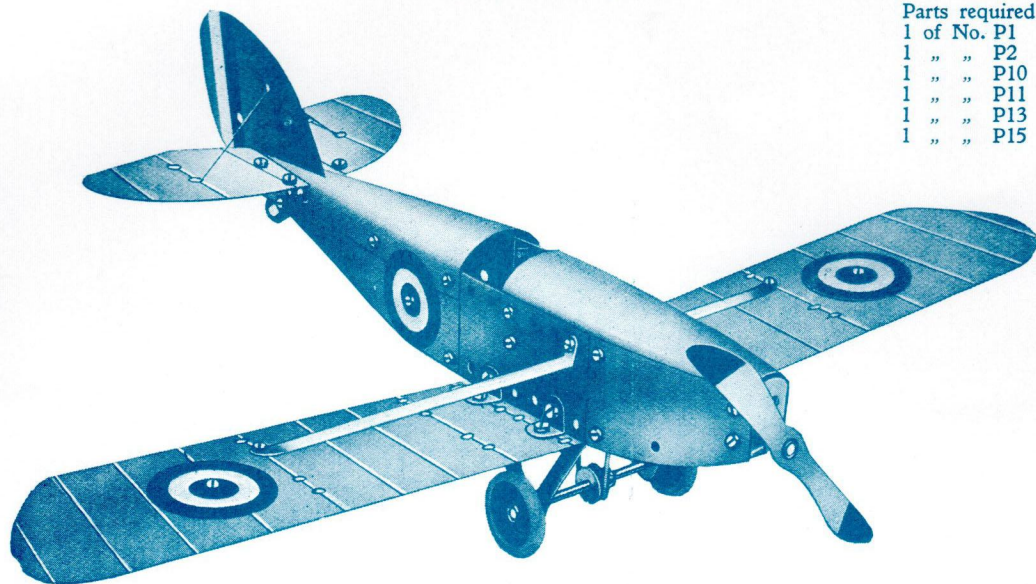
All these Fine Models can be built with Meccano Aeroplane Constructor Outfit No. 1

Model No. 1 Low Wing Monoplane

Aeroplanes are of two main types, monoplanes, having only one wing, and biplanes having two wings. Monoplanes may be sub-divided into three classes, known respectively as the low wing, the high wing, and the parasol types. They are usually faster than biplanes of similar weight with engines of equal power, and a better view is to be obtained from them. The landing speed of monoplanes is generally higher, however, and biplanes are more stable in the air.

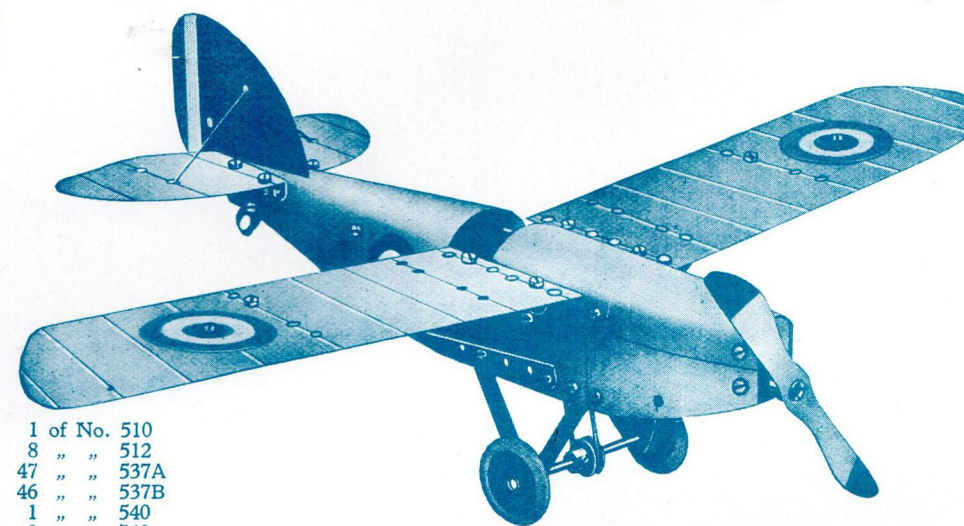
Model No. 1 is a monoplane of the low wing type. Machines of this type are often regarded as the best for speed, and they are largely used by German air lines. Captain Frank Hawks used a low wing monoplane for his record-breaking flights.

A typical British low wing machine is the Avro "Avian Monoplane." Other notable British monoplanes of this type are the D.H. "Tiger Moth," the Blackburn-Segrave "Meteor," the Hendy 302, and the Monospar, the last three being of the cabin type.



Parts required:		2 of No.	P16
1 of No. P1	2	"	P17
1 " " P2	2	"	P18
1 " " P10	1	"	P19
1 " " P11	1	"	P20
1 " " P13	2	"	P31
1 " " P15	1	"	P32
	1	"	P34
	2	"	P36
	2	"	P37
	1	"	P38
	1	"	P39
	2	"	P44
	1	"	14
	1	"	16B
	2	"	22
	2	"	23A
	1	"	58A
	1	"	58C
	1	"	59
	1	"	510
	8	"	512
	45	"	537A
	44	"	537B
	1	"	540
	2	"	548
	1	"	611C

Model No. 2 High Wing Monoplane



Parts required:		1 of No.	P1
1 " " P2	1	"	P2
1 " " P10	1	"	P11
1 " " P13	1	"	P15
1 " " P16	2	"	P17
1 " " P18	2	"	P19
1 " " P20	1	"	P31
1 " " P32	2	"	P34
1 " " P36	2	"	P37
1 " " P38	1	"	P39
1 " " P44	2	"	14
1 " " 16B	8	"	512
1 " " 22	47	"	537A
1 " " 23A	46	"	537B
1 " " 58A	1	"	540
1 " " 58C	2	"	548
1 " " 59	1	"	611C

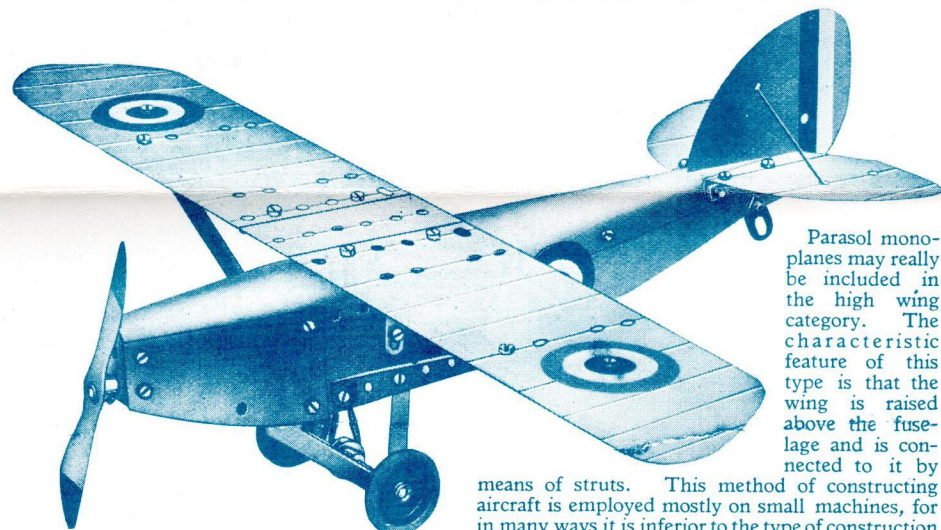
High wing monoplanes are probably the most popular monoplane aircraft. They are usually more stable than the low wing type, and the view downwards is much better, being practically unobstructed.

Machines of this type are used in all parts of the world, and they range from small single-seater machines to huge aircraft seating as many as 30 people. The "Spider" machine employed by the Duchess of Bedford on her numerous famous flights is of this type.

The De Havilland "Puss Moth" is a good British example of a high wing monoplane, while other notable machines include the Comper "Swift," the Desoutter Coupé, the D.H. "Hawk Moth," the Civilian Coupé, the Avro V and VI, the Vickers "Vista," and the Westland "Wessex."

Model No. 3 Parasol Monoplane

Parts required:		2 of No.	P17
1 of No. P1	2	"	P18
1 " " P2	1	"	P19
1 " " P8	1	"	P20
1 " " P10	2	"	P29
1 " " P11	2	"	P31
1 " " P13	1	"	P32
1 " " P15	1	"	P34
2 " " P16	2	"	P36
	1	"	P37
	1	"	P38
	1	"	P39
	2	"	P44
	1	"	14
	1	"	16B
	2	"	22
	2	"	23A
	1	"	58A
	1	"	58C
	1	"	59
	1	"	510
	41	"	537A
	40	"	537B
	1	"	540
	2	"	548
	1	"	611C

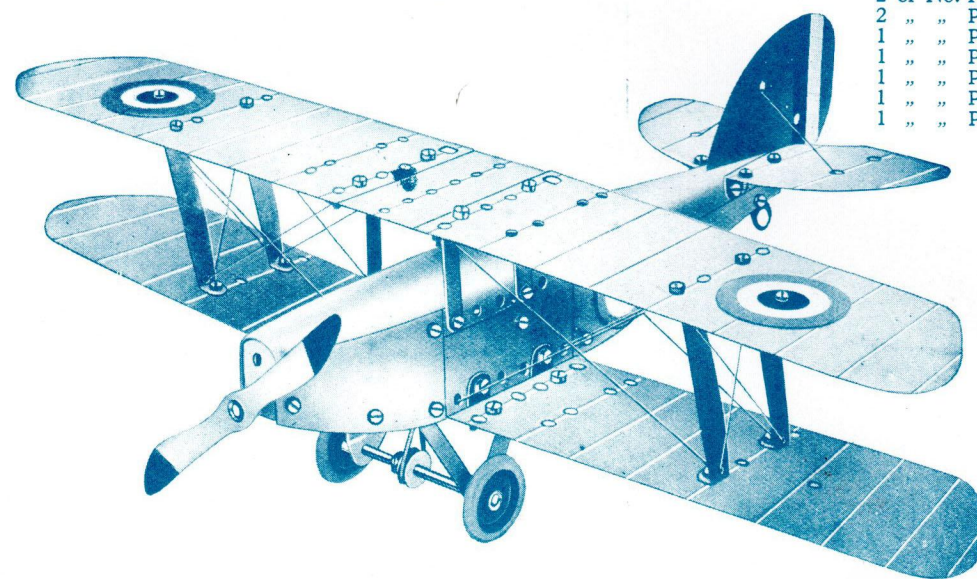


Parasol monoplanes may really be included in the high wing category. The characteristic feature of this type is that the wing is raised above the fuselage and is connected to it by means of struts.

This method of constructing aircraft is employed mostly on small machines, for in many ways it is inferior to the type of construction in which the wing is bolted firmly to the fuselage. One great disadvantage is that the struts required to keep the plane in position offer great resistance to the wind, and thus detract considerably from the all-round performance of the machine.

Typical British prototypes are the Boulton and Paul "Phoenix" and the Westland "Widgeon." These are both light aeroplanes, and each possesses accommodation for two people.

Model No. 5 Single-Seater Fighter



Parts required:		2 of No.	P16
2 of No. P1	2	"	P17
2 " " P2	2	"	P18
1 " " P8	1	"	P19
1 " " P10	1	"	P20
1 " " P11	2	"	P24
1 " " P13	2	"	P25
1 " " P15	4	"	P29
	1	"	P32
	1	"	P34
	2	"	P36
	2	"	P37
	1	"	P38
	1	"	P39
	2	"	P44
	1	"	14
	1	"	16B
	2	"	22
	2	"	23A
	1	"	58A
	1	"	58C
	1	"	59
	1	"	510
	8	"	512
	57	"	537A
	56	"	537B
	1	"	540
	2	"	548
	1	"	611C

Single-seater fighter machines are very fast aeroplanes, the function of which is to patrol certain sections of sky so that no enemy aircraft can pass. Recently a new type of machine known as the interceptor fighter has been produced. This is an extremely fast craft, capable of climbing high enough to intercept enemy bombers intent on raiding London, and whose approach is not discovered until they pass the coast. In these aeroplanes military load and fuel capacity are sacrificed to an exceedingly fast climb and a high maximum speed.

The world's best single-seater fighter probably is the Bristol "Bulldog," a machine that is used in the R.A.F. and in the Air Forces of many foreign countries. At present the Hawker "Fury" is the only type of single-seater interceptor fighter used in the R.A.F.

INSTRUCTIONS

How to Build Model Aeroplanes with Meccano Aeroplane Constructor Outfit No. 1

ASSEMBLY OF THE FUSELAGE.

In assembling a model, always commence by building up the fuselage. First take a Fuselage Top Front, a Fuselage Front, and two Fuselage Sides, Front. Secure these together at the front by passing Bolts through the side sections and through the flanges of the Fuselage Front. Next secure a Fuselage Underside in position by Bolts passing through the middle perforations in the Fuselage Sides, Front. In this way the nose and front portion of the fuselage is formed. Two Fuselage Side Middle sections are then pushed under the Side pieces that are already in position, so that they overlap one hole. Bolts are passed through both Front and Middle sections to lock them rigidly to the Front Top portion of the fuselage. The Rear Side sections of the fuselage are overlapped and bolted to the Middle portions, and the rear part of the Fuselage Top is secured at the same time. One Right Hand and one Left Hand Underearriage V Struts are now bolted to the middle of the fuselage, and a 1 1/2" x 1/2" Double Angle Strip 3 (Fig. A) is bolted between the Middle Side sections.

FITTING THE PROPELLER DRIVING MECHANISM.

The Propellers of all the models shown in this leaflet are connected to the Axle carrying the landing wheels, so that the Propeller rotates when the model is pushed forward. The manner in which the drive is arranged is shown in Fig. A. The Propeller is secured to one end of the 4 1/2" Axle Rod 1, and the Rod is then pushed through the lower hole in the Fuselage Front. A 1/2" Pulley 2 is placed on the Rod together with the endless Spring Cord Belt 5. The end of the Axle Rod 1 is then pushed through the centre hole in the 1 1/2" x 1/2" Double Angle Strip 3. The 4 1/2" Axle Rod 1 is kept in place by means of a Collar 4. A 3" Axle is pushed through one Underearriage V Strut and a 1/2" Pulley 6 is placed on the 3" Axle. The Spring Cord Belt is also placed round this Axle, and the Axle is then pushed through the hole in the second Underearriage V Strut; a Rubber-Tyred Landing Wheel is mounted on each end of the 3" Axle Rod. After the landing wheel Axle has been mounted in place the Spring Cord Belt may be placed round the groove in the 1/2" Pulley 2 and their respective Rods by means of the grub-screws in their bosses. In securing place take care to see that it is twisted round the Pulleys in such a way that the clockwise direction when the model is moved forward, looking from the front.

ASSEMBLING THE TAIL PLANES AND RUDDER.

The method of Two Angle Brackets

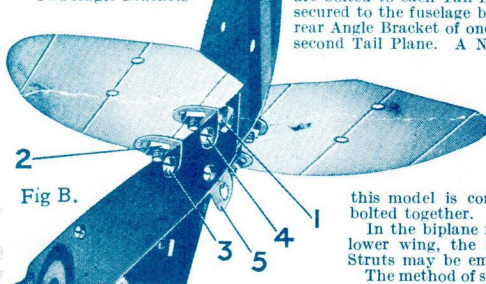


Fig. B.

assembling the Tail Planes and Rudder will be followed from Fig. B. The 2 of each Tail Plane is bolted to each Tail Plane, and the Front Bracket 2 of each Tail Plane is secured to the fuselage by a 7/32" Bolt 3. A 1/2" Bolt 4 is passed through the rear Angle Bracket of one Tail Plane, through the Fuselage Side Rear sections, and through the rear Angle Bracket of the second Tail Plane. A Nut is placed upon the end of the Bolt and the Bolt is screwed up tightly so that the Tail Planes are locked rigidly to the rear of the fuselage of the model. The Flat Bracket 5 that forms the tail skid of the machine is held in place between the Fuselage Side Rear section by means of a 7/32" Bolt. The Rudder is pushed into position between the ends of the Fuselage Side Rear sections, and it is held in place rigidly by the 7/32" Bolt 1.

METHOD OF FITTING THE MAIN PLANES.

In the monoplane models (with the exception of Model No. 3), the Main Plane sections are secured to the fuselage by means of Angle Brackets. In Model No. 3, two Wing Stays and two Centre Section (Straight) Struts are used to support the wing above the fuselage. The wing in this model is composed of two Large Main Plane sections, and one Extension Plane which are overlapped and bolted together.

In the biplane models, when the top wing is "staggered," that is to say, is not mounted vertically above the lower wing, the Staggered Inter Plane Struts are used. In other biplane models, the Straight Inter Plane Struts may be employed. The method of securing the bracings (lengths of Meccano Cord) between the Struts will be clear from the illustrations.

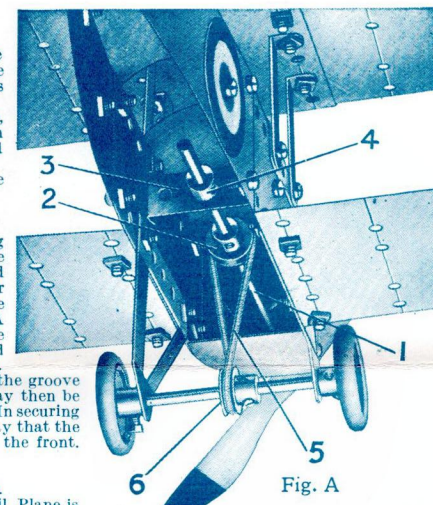
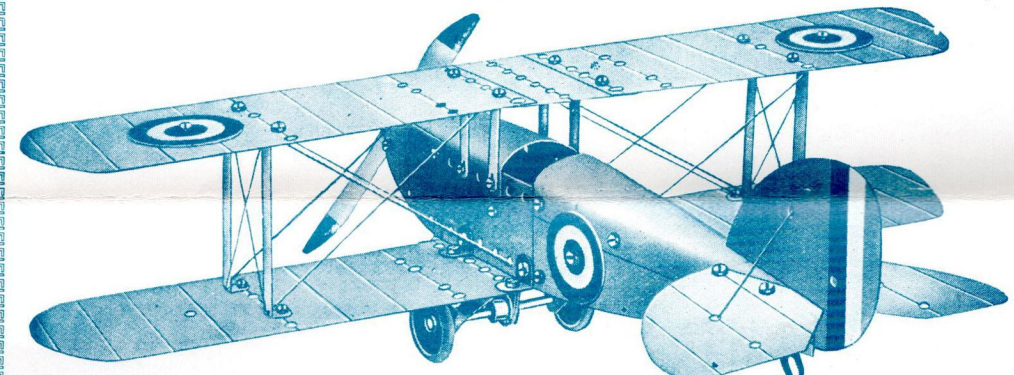


Fig. A.

Model No. 4 Standard Light Biplane

Parts required:		2 of No.	P17
2 of No. P1	2	"	P18
2 " " P2	1	"	P19
1 " " P8	1	"	P20
1 " " P10	4	"	P28
1 " " P11	4	"	P29
1 " " P13	1	"	P32
1 " " P15	1	"	P34
2 " " P16	2	"	P36
	2	"	P37
	1	"	P38
	1	"	P39
	2	"	P44
	1	"	14
	1	"	16B
	2	"	22
	2	"	23A
	1	"	58A
	1	"	58C
	1	"	59
	1	"	510
	57	"	537A
	56	"	537B
	1	"	540
	2	"	548
	1	"	611C



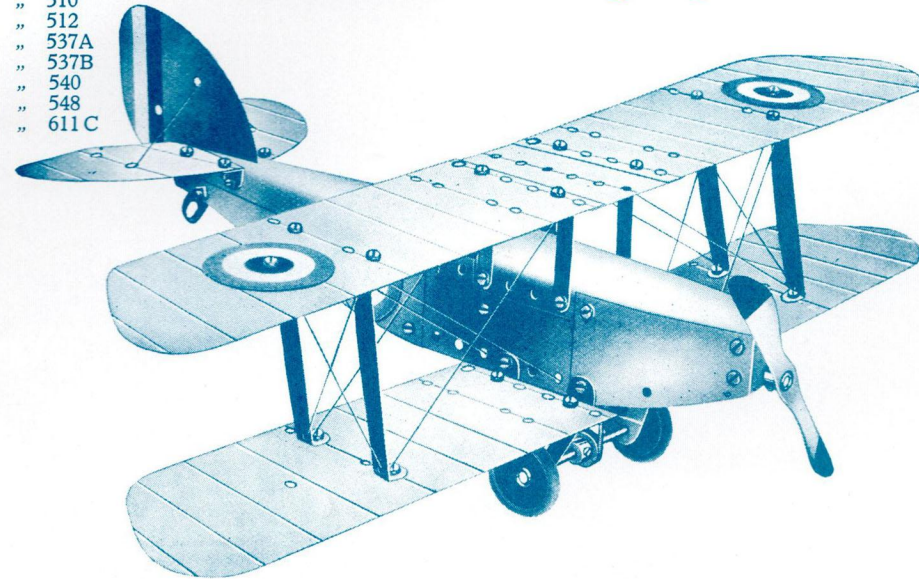
In England biplanes are still more numerous than aeroplanes of the monoplane type. For many purposes it is almost essential that a machine should be fitted with two wings. A Service aeroplane, for instance, must not only be fast, but also capable of carrying a good load at both low and high altitudes. The great wing area of a biplane, although it involves a slight decrease in speed, gives the machine a greater carrying capacity.

Model No. 4 is a biplane of the light type. These machines are used mostly for civilian flying, although they are also employed in the R.A.F. It was on light aeroplanes that the wonderful flights to Australia were made by Mr. Bert Hinkler, Air Commodore Kingsford-Smith and Mr. C. W. A. Scott, and from Australia by Mr. J. A. Mollison.

The most popular British light biplane is the D.H. "Moth." Other typical machines of this type are the Avro "Avian," the Blackburn "Bluebird," the Robinson "Redwing" and the Spartan "Arrow."

Model No. 6 Training Biplane

Parts required:		1 of No.	59
2 of No. P1	1	"	510
2 " " P2	8	"	512
1 " " P8	55	"	537A
1 " " P10	54	"	537B
1 " " P11	1	"	540
1 " " P13	2	"	548
1 " " P15	1	"	611C
	1	"	P16
	2	"	P17
	2	"	P18
	1	"	P19
	1	"	P20
	2	"	P24
	2	"	P25
	4	"	P29
	1	"	P32
	1	"	P34
	2	"	P36
	2	"	P37
	1	"	P38
	1	"	P39
	2	"	P44
	1	"	14
	1	"	16B
	2	"	22
	2	"	23A
	1	"	58A
	1	"	58C



The requirements of a good training machine are many. It must be easy to fly and must be stable; its maximum speed must be fairly high, but its landing speed must be low. A biplane is best suited to comply with these conditions, and ordinary light aeroplanes are now frequently employed.

A training machine has been taken as a prototype for Model No. 6. The most famous machine of this type is the Avro 504, first designed and constructed in 1913. Since then it has been in constant service in all parts of the world, and it is still one of the best aircraft for its particular purpose. A more modern training machine is the Avro "Trainer," and another typical school aeroplane is the Hawker "Tomtit."