

THE L.V.G. TWO-SEATER BIPLANES

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THIS report is concerned with two L.V.G. biplanes, of which one is of the C.V. type, while the other, a C.VI. type machine, is of later design, embodying certain alterations and improvements. The C.V. machine is allotted G/3Bde/5, and the C.VI. which was brought down near Proven on August 2nd by two S.E. 5's, piloted by Lieuts. Gordon and Gould, is allotted G/2 Bde/21.

Any description which follows and is not definitely stated to apply to either model, must be read as appertaining to the C.VI type.

The C.V. machine was only slightly damaged, and has been put into flying order, but the C.VI. has suffered severely, and it must be stated that on this account the G.A. drawings are not guaranteed to be of absolute accuracy in every respect. The greatest care has, however, been taken in their preparation, and only features of rigging such as dihedral and stagger (besides the tail planes, which are in a very fragmentary condition) are at all doubtful. In matters of detail the drawings are accurate.

Some leading particulars of both machines are given below:—

	C.V. Type.	C.VI. Type.
Weight empty ..	2,188 lbs.	2,090 lbs.
Total weight ..	3,141 lbs.—	3,036 lbs.
Area of upper wings (with ailerons) ..	238.4 sq. ft.	196.0 sq. ft.
Area of lower wings ..	190.4 sq. ft.	160.0 sq. ft.
Total area of wings ..	428.8 sq. ft.	356.0 sq. ft.
Loading per sq. ft. of wing surface ..	7.3 lbs.	8.5 lbs.
Area of aileron, each ..	13.6 sq. ft.	11.2 sq. ft.
Area of balance of aileron ..	0.4 sq. ft.	0.0 sq. ft.
Area of tail plane ..	21.6 sq. ft.	28.0 sq. ft.
Area of fin ..	5.2 sq. ft.	5.2* sq. ft.
Area of rudder ..	6.8 sq. ft.	6.8* sq. ft.
Area of balance of rudder ..	0.6 sq. ft.	0.6* sq. ft.
Area of elevators ..	20.8 sq. ft.	16.0 sq. ft.
Area of balance of elevator (one) ..	1.2 sq. ft.	0.8 sq. ft.
Total weight per h.p.	13.7 lbs.	13.2 lbs.
Crew ..	2—Pilot and observer.	
Armament ..	1 Spandau and 1 Parabellum gun.	
Engine ..	230 h.p. Benz.	
Petrol capacity ..	52½ gals.	52½ gals.

* Assumed same as C.V. type.

Wings.

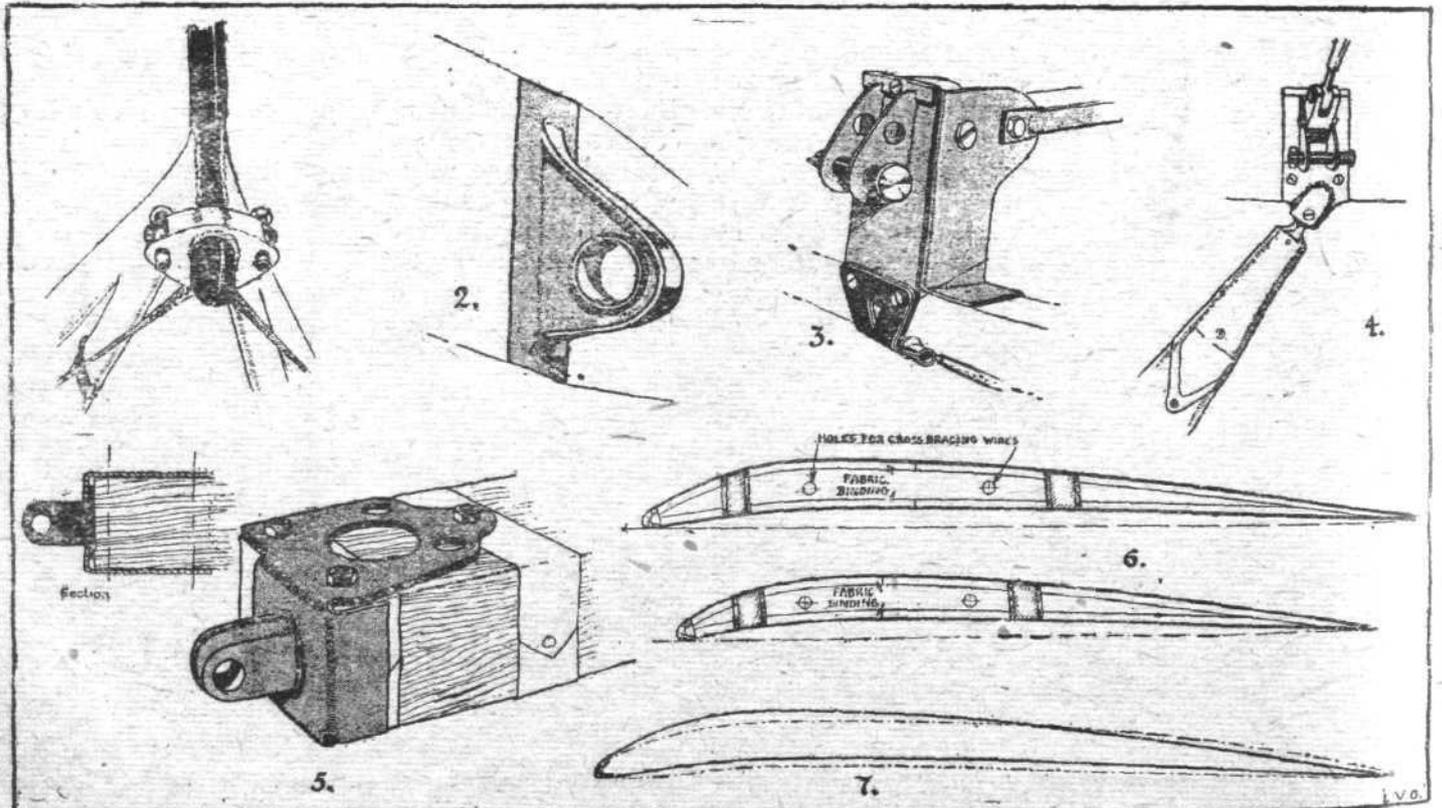
There are several important differences between the arrangement of main planes of the two models, as will be seen by referring to the G.A. drawings.

The wings of the C.V. L.V.G. are without stagger, and are not swept back, but both upper and lower planes are set at a dihedral angle, this being 1° for the upper, and 2° for the lower wings. The lower planes are smaller all round than the upper, and have rounded tips. The upper planes only have ailerons, which are of equal chord throughout their length, and are balanced. These planes also follow what was, until recently, the usual enemy practice, by being joined at their roots to a central *cabane*. There is, therefore, no horizontal centre section in this aeroplane, except for the 3-ply box (about 4 in. wide), which surrounds the horizontal tube of the *cabane*. For improving the view, the upper plane is cut away over the pilot's cockpit. Relative to the crankshaft the upper wing has a constant angle of incidence of 5°. That of the lower wing is the same, except at the tip, where the angle is washed out to 4°, and at the root to 4½°.

Both upper and lower wings are attached to the body by the same general means, this being adapted to the particular positions and conditions of each joint. In the case of the upper planes, the *cabane* has lugs welded to its upper side at both ends. Fig. 1 shows the fitting at the forward end, and the pierced lug on the wing spar (see Fig. 2) fits into the fork. The same type of hinge pin is used for all wing joints, and for the aileron hinges also. It consists of a short length of steel tube, carrying at one end some form of stop, and at its other end a slot in which a short rectangular piece of steel is free to rotate, the steel piece being pivoted at its centre. Thus, when the steel piece is placed parallel to the tube, the whole fitting can be passed through any hole which will accommodate the tube, but when the piece is placed at right angles to the tube axis, the tube cannot be withdrawn through a small hole. A helical spring ensures that the steel piece shall be pressed against the hole, and not be free to slip into the parallel position.

The lower wing attachments are very similar, as will be gathered from Figs. 3 and 4, which show respectively the front and rear joints, and this plan has not been changed on the C.VI. type of L.V.G., except that the lug on the wing spar is now fashioned as shown in Fig. 5.

In the later model—the C.VI—the planes are of the same general shape, but important changes are remarked. The radiator has been moved from the position it occupied on the C.V. (see G.A. drawings), and is now built into the horizontal centre section. It is, of course, common German practice to



Some L.V.G. Constructional Details.—1. Spar fitting on *cabane* of the Type C.V. L.V.G. ; 2. Lug on spar engaging with fitting in 1 ; 3. Bottom front spar joint ; 4. Bottom rear spar joint ; 5. Wing spar lug on the C.VI. Type ; 6. Upper and lower wing sections of C.VI. ; 7. C.VI. upper section with R.A.F. 14 section superimposed.