LIGHT AIRPLANES

OF

FRANCE, GERMANY, ITALY, BELGIUM, HOLLAND,

CZECHOSLOVAKIA AND LITHUANIA.

Compiled by the National Advisory Committee for Aeronautics.

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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

TECHNICAL MEMORANDUM NO. 301.

LIGHT AIRPLANES

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FRANCE, GERMANY, ITALY, BELGIUM, HOLLAND,
CZECHOSLOVAKIA AND LITHUANIA.*

In the presentation of data regarding light airplanes of these countries, it will not be possible to make comparisons as completely as given in preceding Technical Memorandums, owing to lack of information and a more complete or extensive program governing the contest or test flight. The characteristics or qualifications, however, as available in published accounts, are given individually with the structural description and will be found to represent quite thoroughly the performance or efficiency of the airplane.

Unfavorable weather interfered seriously in the "Tour of France" and the "Rhône" contest and prevented, no doubt, a more successful participation on the part of airplanes which had previously displayed excellent qualifications both in performance and structural design.

* Compiled by the National Advisory Committee for Aeronautics.

See Technical Memorandum No. 299: Two-Seat Light Airplanes which Participated in Contest Held at Lympne, England, Week of September 29 to October 4, 1924; and No. 297: Royal Aero Club Light Aeroplane Competition.
<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Page</th>
<th>Fig. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>Farman</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Carmier</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Holland</td>
<td>Pander H-2</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Biplane H-1</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>V.S. Holland 12-A</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Belgium</td>
<td>Demonty-Poncelet</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>BH-16</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Germany</td>
<td>Kalibri U-7</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Roter-Vogel</td>
<td>21</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Albatross L-66</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Daimler L-15</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Gaspar C-17</td>
<td>28</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Udet</td>
<td>32</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Aachen KF</td>
<td>33</td>
<td>14</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Dobkevicius</td>
<td>34</td>
<td>15</td>
</tr>
<tr>
<td>Italy</td>
<td>Rondine</td>
<td>36</td>
<td>16</td>
</tr>
</tbody>
</table>

Relative sizes in plan outline

The Propeller for Light Airplanes
The "Daimler L 15" light airplane (two-seat high-wing monoplane) contains the reconditioned wings and fuselage of the low-powered monoplane glider designed by Herr Klemm and constructed at the Daimler Carriage Works in 1919. In 1922 it was converted into a glider by the removal of the engine and experiments showed it to be very efficient aerodynamically and possessing ample controllability. It was then equipped with another, more powerful, engine and designated the L 15 light airplane. As will be seen from the outline drawings, it is cantilever with a semi-thick wing tapering in both chord and ordinate toward the tips. The two spars are of new design in cross-section which it is claimed prevents buckling. The wing is in three sections with the tip lengths half the central length in span and is without dihedral or sweep back. The sections are joined by quick release devices. Ordinary ailerons are used and are hinged to the rear spar.

The fuselage is of the usual structure, consisting of four longerons with wire bracing and formers. In section the main structure is rectangular, but fairings are added to top and bottom to give better streamlining. The covering is fabric, doped in the usual way. The front end of the structure is detachable near the leading edge of the wing at which point two transverse members are adjacent and are joined by a simple union requiring no adjustment or special

* From "Das Leichtflugzeug für Sport und Reise" by Werner v. Langsdorff, 1924; "Flight," May 8, 1924.
tools. All separable parts are joined by slender safety bolts and a disassembly is easily accomplished.

In the control mechanism the usual stick and rudder bar are used with provisions for dual control if needed and the cables are almost entirely within the fuselage and wings.

The pilot occupies the front seat situated between the spars. With a passenger in the back seat the counter balancing of the engine weight seems to be good although it appears likely that with this arrangement the center of gravity might be somewhat aft.

The landing gear is equipped with wheels having three-ply wood disk sides and ash rims but without rubber tires. Loads up to 600 kg (1323 lb.) were withstood by one wheel under test without breaking, although it weighed but 1.2 kg (2.64 lb.). These wheels are similar to those used on the A.N.E.C. monoplanes in the 1923 Lympne contest. The strut arrangement is similar to that employed on torpedo seaplanes, each wheel having two diagonal struts in V formation, extending from joints at the fuselage longerons without a horizontal connecting axle and are free to oscillate laterally. The landing shocks are communicated through a vertical strut to elastic cables situated within the wings instead of to the usual shock absorbing mechanism at the wheels. Whether or not this method may cause a serious strain on the wing structure in the event of a hard landing, resulting possibly in a subsequent failure in flight, is a very important consideration.

The engine is mounted on a steel structure and cowled in with
the finned cylinders projecting sufficiently for air cooling. The cowling is easily removable, giving ready access to both engine and gears. A planetary reduction gear is used.

The fuel tank is installed behind the engine and is sufficiently high to provide a direct gravity feed.

To meet transportation requirements, a special carriage equipped with a pair of rubber-tired wheels is used. The airplane is carried with its wings parallel to the fuselage, the stabilizer being raised to a vertical position and fastened with a tie rod which is hooked into its hinges. The center section is carried on one side and the two end sections on the other.

But few particulars are available regarding the performance of this airplane, but in a solo flight it is said to have reached an altitude of 2134 m (7000 ft.) and to have made a duration flight of 3 hours and a distance flight of 118 miles. With a passenger it is credited with an altitude of 1100 m (3600 ft.), a duration of 2 hours and a distance flight of 75 miles.

Considering the low engine power, these results are very creditable and especially so, since the airplane was designed four years ago, before the efficiency of light airplanes began to be apparent.

Fig. 11 contains the engine data, areas, dimensions and outline drawings.
Span 12.6 m
(41.34 ft.)
Length 6.62 m
(21.72 ft.)
Max. chord 2.3 m
(7.55 ft.)

Wing area 24 m²
(258.33 sq.ft.)

Fig. 11 "Daimler L 15" two-seat light airplane