

gation. Their first idea was to make a glider fly as a kite, so that they could remain in the air for some appreciable time, and thus become used to the sensation of being in the air, for on investigating the thousand flights of Lilienthal, they found that he had not spent more than a total of five minutes in the air. They did not complete their first practical apparatus until 1900, but following Lilienthal's death they devoted much time and thought to the matter and decided fully just what they wanted before they tried their man-carrying apparatus. The following radical changes from the type of glider designed by Herring and used by Chanute were made.

1. They decided to do away with the tail.

2. They provided for lateral equilibrium and steering to the right or left by a peculiar torsion of the main surfaces which is equivalent to presenting one end of the wings at a greater angle than the other. (First tried by Le Bris).

3. They introduced a front moveable plane with which to compensate for the moveable center of pressure, being the first advocates of this method now so generally adopted throughout the world.

4. They moved the forward main cross-piece to the extreme front edge.

They enclosed all members and ribs other than struss in the cloth of the plane.

5. They re-arranged the wiring so that all of the wires could be tightened by merely shortening two of them.

A slight conception of the work done by them between