

Motivation for Air-Launch: Past, Present, and Future



AIAA Space 2017, 13 Sep 2017, Hyatt Regency, Orlando

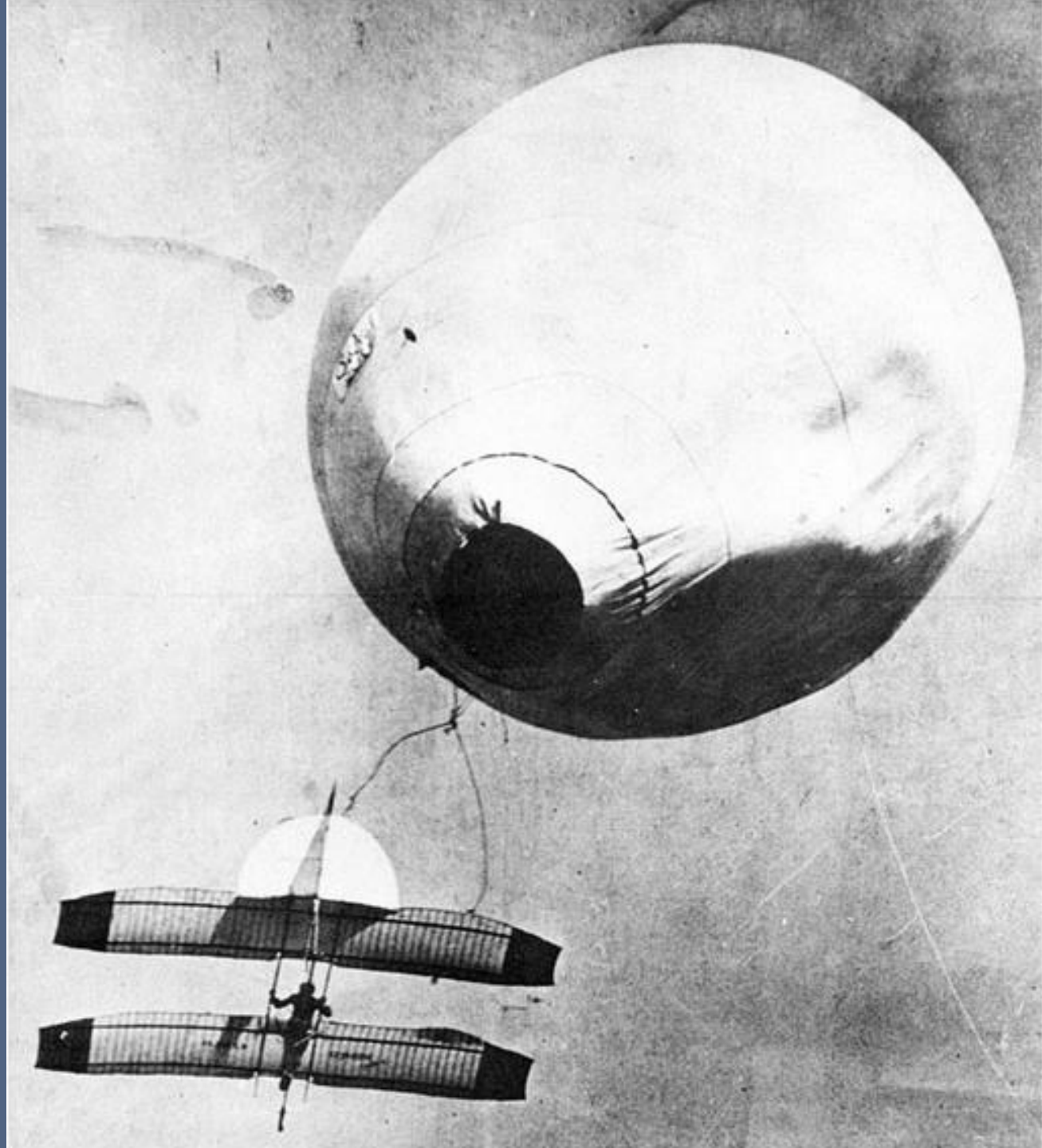
Presenter: John W. Kelly/Armstrong Flight Research Center

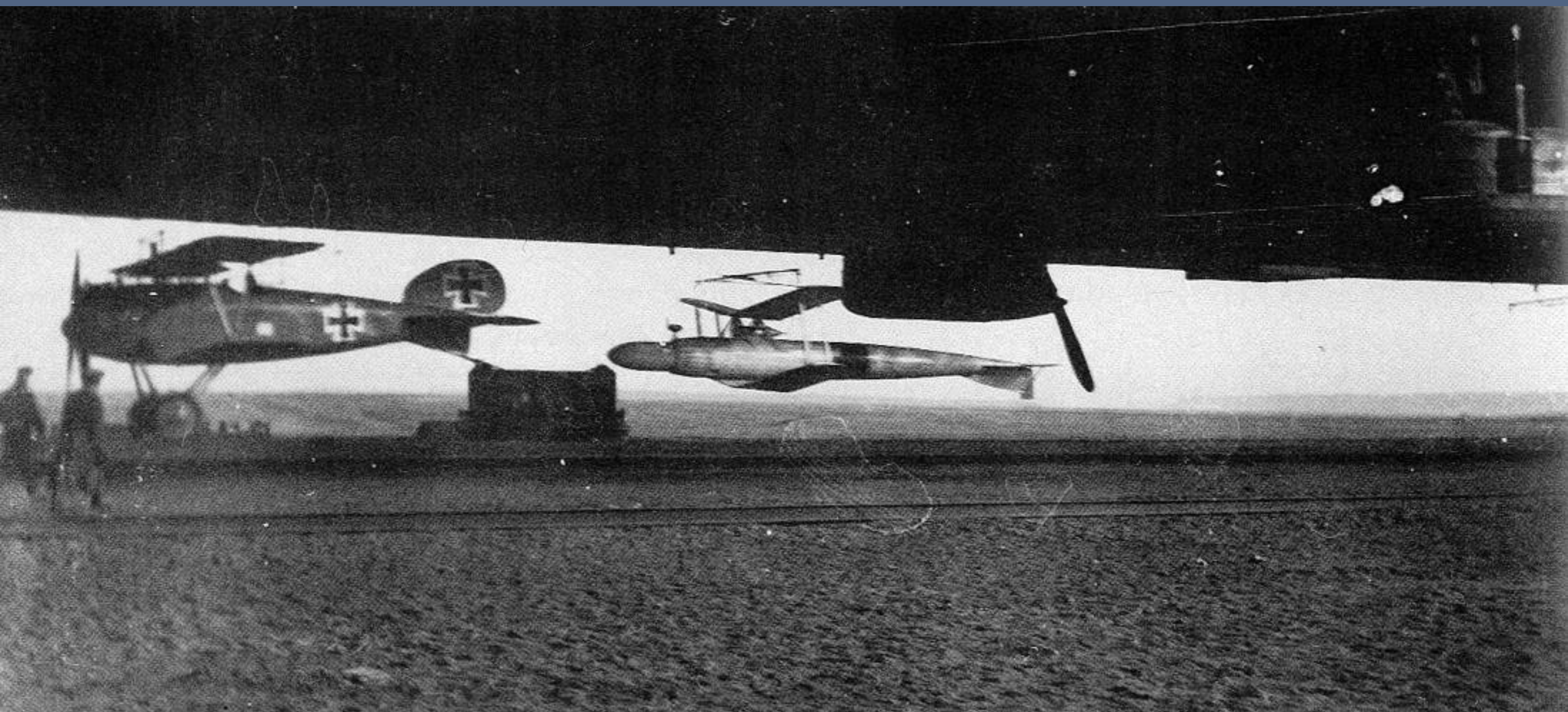
**Authors: John W. Kelly, Charles E. Rogers, Gregory T. Brierly, J. Campbell Martin,
and Marshall G. Murphy**

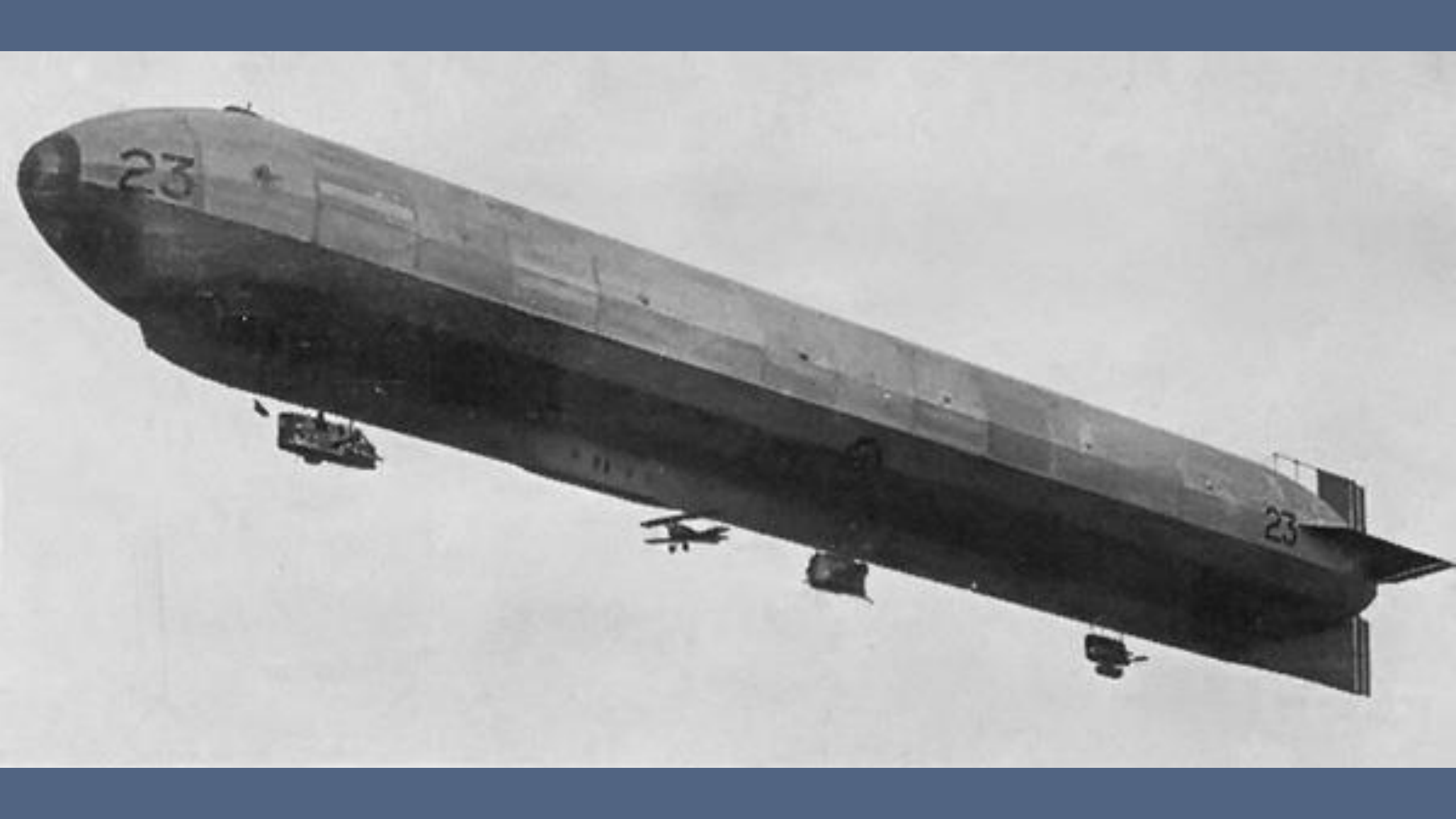
NASA Armstrong Flight Research Center, Edwards, California, 93523

“Air-Launch,” as defined for this paper ...

- *two or more air-vehicles* joined and working together, that eventually separate in flight, and that have a combined performance greater than the sum of the individual parts.*
- The definition of “air-vehicles” includes, but is not limited to: airplanes (powered and unpowered), airships, blimps, balloons, space launch vehicles, and munitions, so long as those munitions are integrated into a guided air-vehicle. This definition of air-launch specifically excludes release of unguided munitions (i.e., dumb bombs dropped from an aircraft).









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1136 FIRST CONTACT EVER ESTABLISHED BETWEEN AIRPLANE AND AIRSHIP IN FLIGHT, AT LANGLEY FIELD, VA.
9-18-23

20TH PHOTO SECTION

11516 A.S.



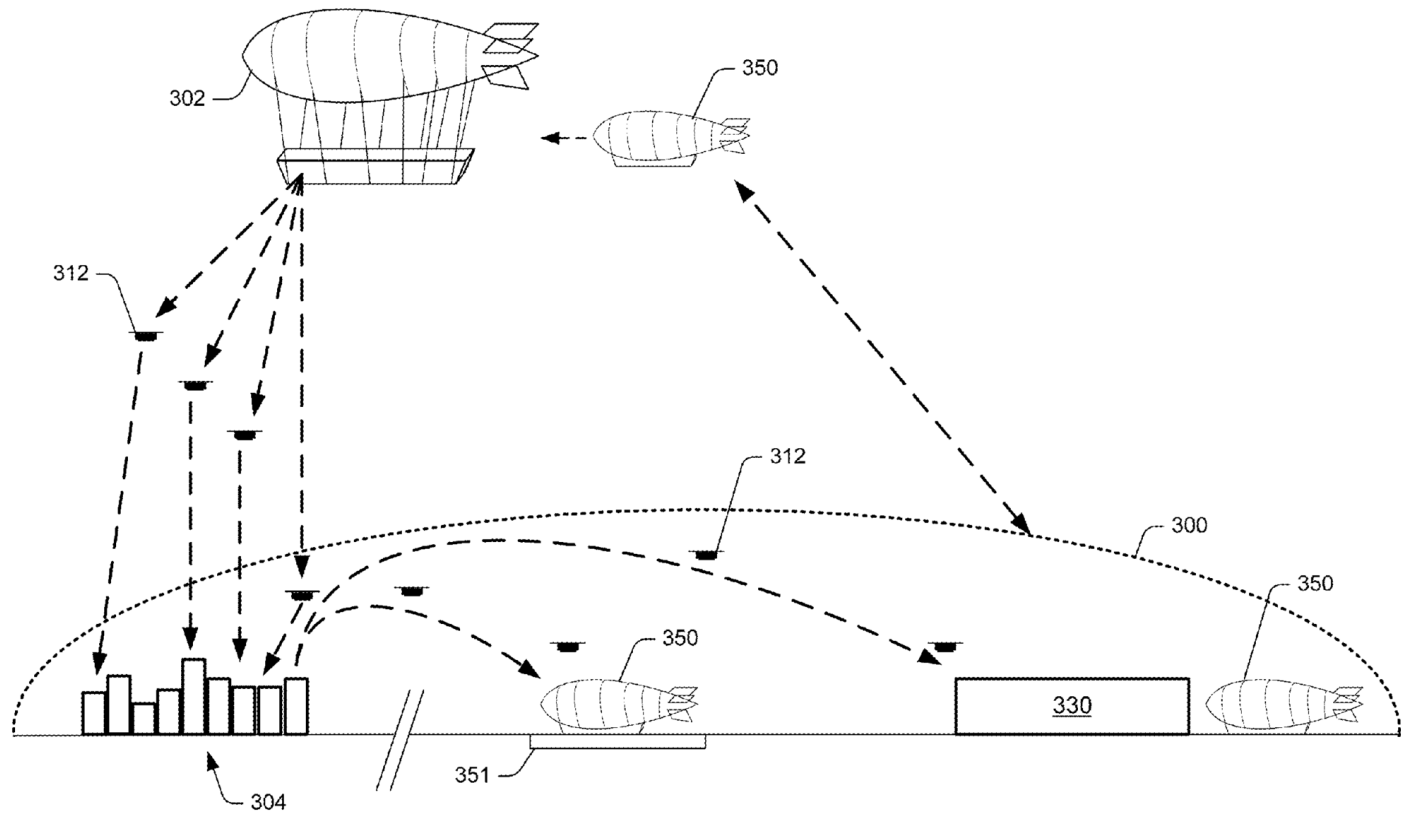


FIG. 3

CURTISS GLIDER

5822-3

35101R



CURTISS GLIDER

5822-4



58111P





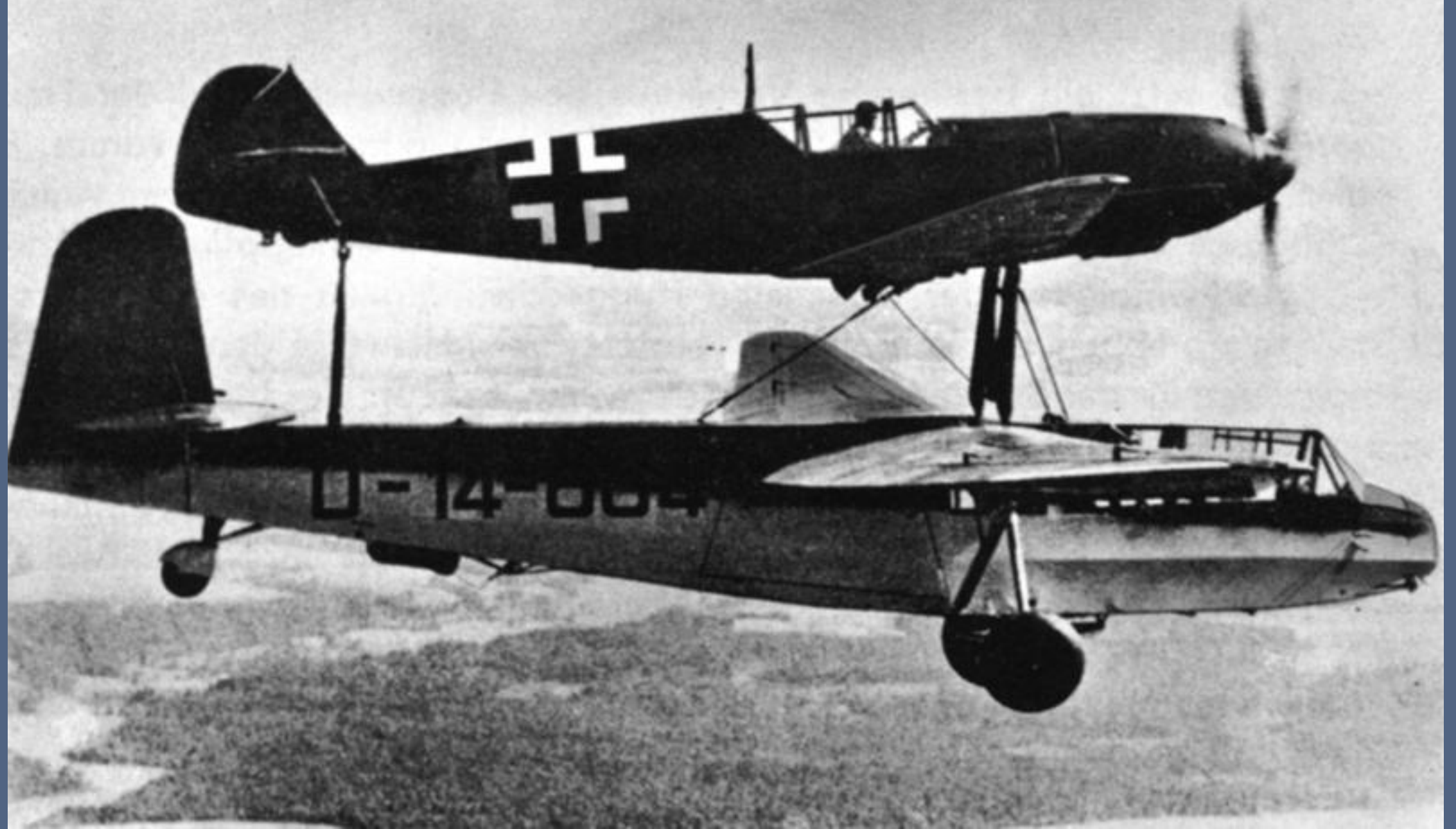
Bundesarchiv, Bild 1011-567-1519-18
Foto: Stöcker | 1943

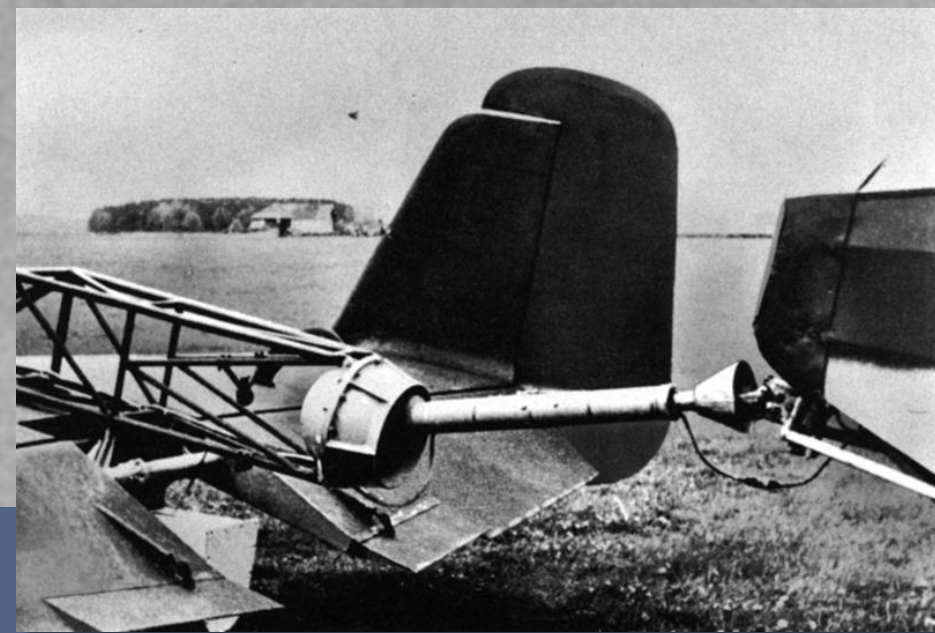
The Gliders of WWII:

Nation	Approximate Number Produced during WWII
Germany	4000
Britain	2200, plus 740 CG-4s imported from the U.S.
Japan	800
Soviet Union	400
United States	16,000

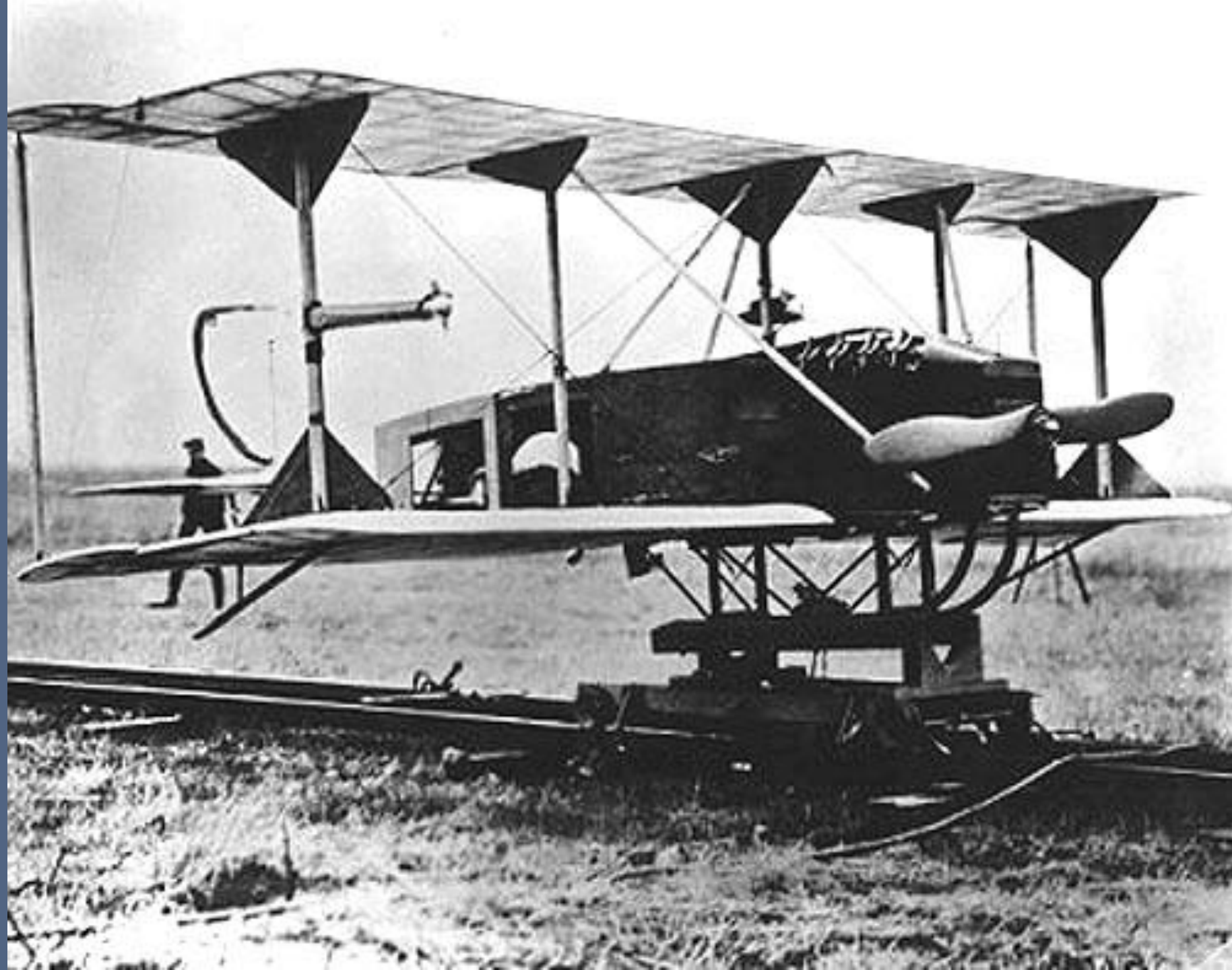






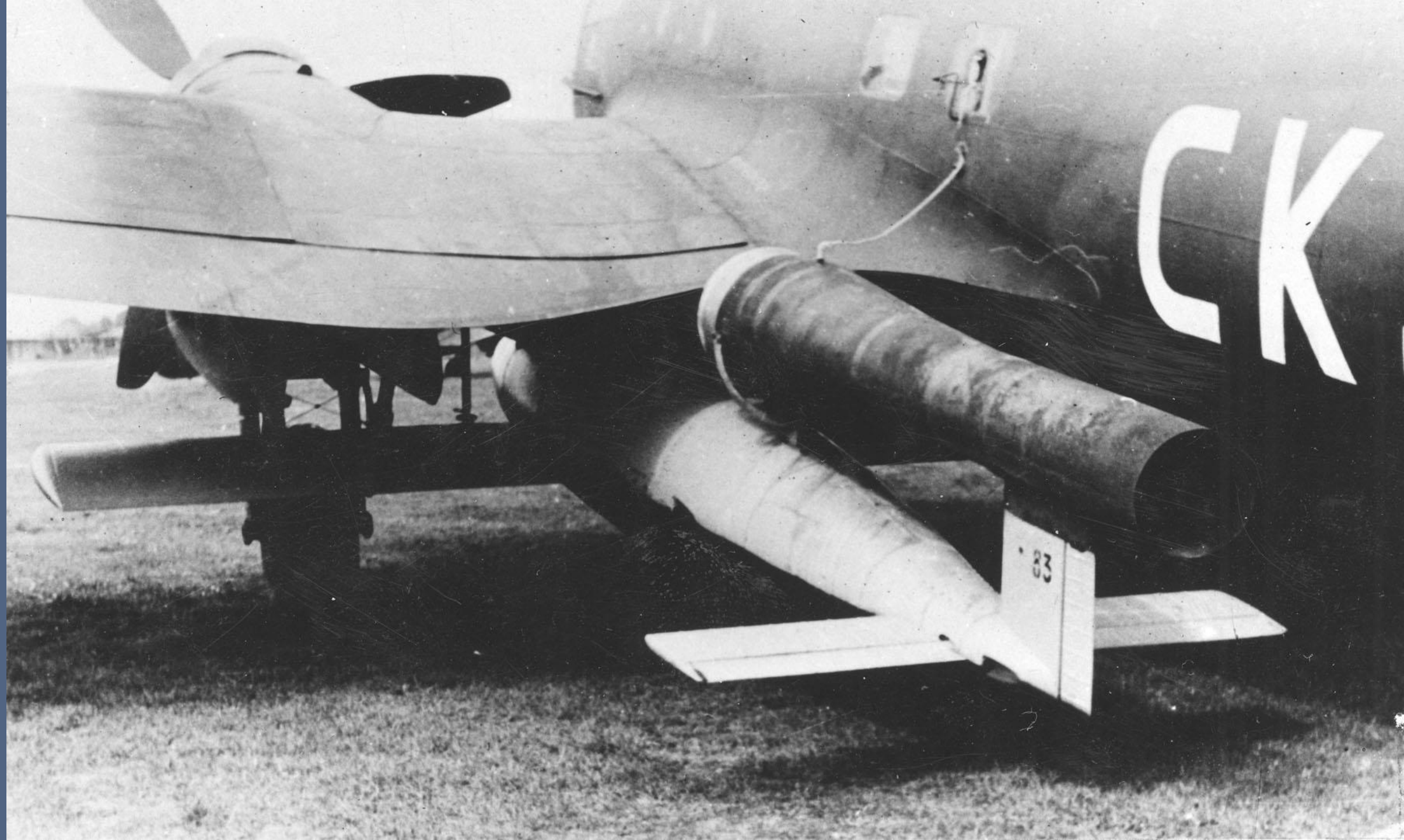








Bundesarchiv, Bild 146-1973-029A-24A
Foto: Lysiak | 1944/1945









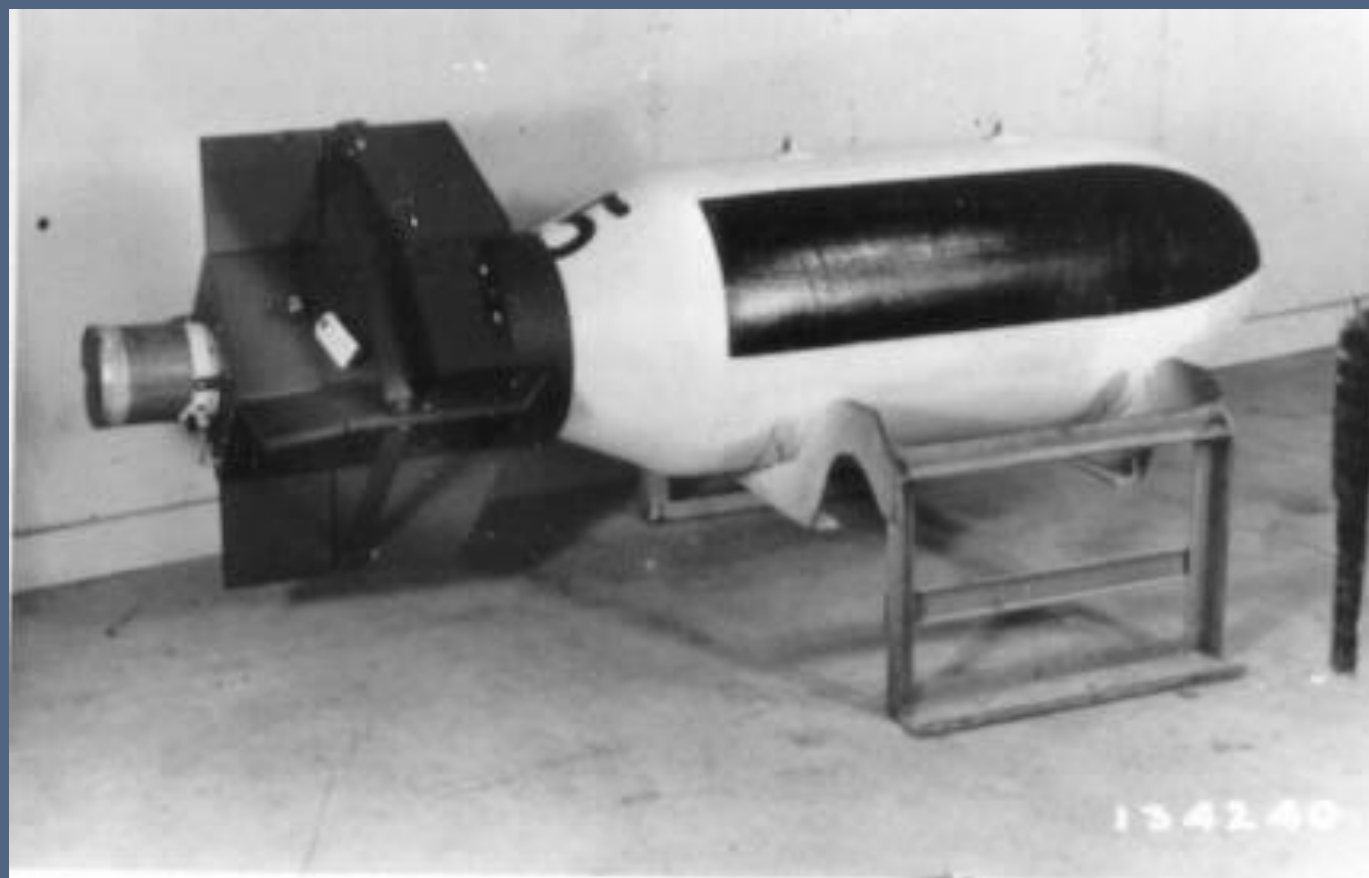




GERMAN "PICK-A-BACK"













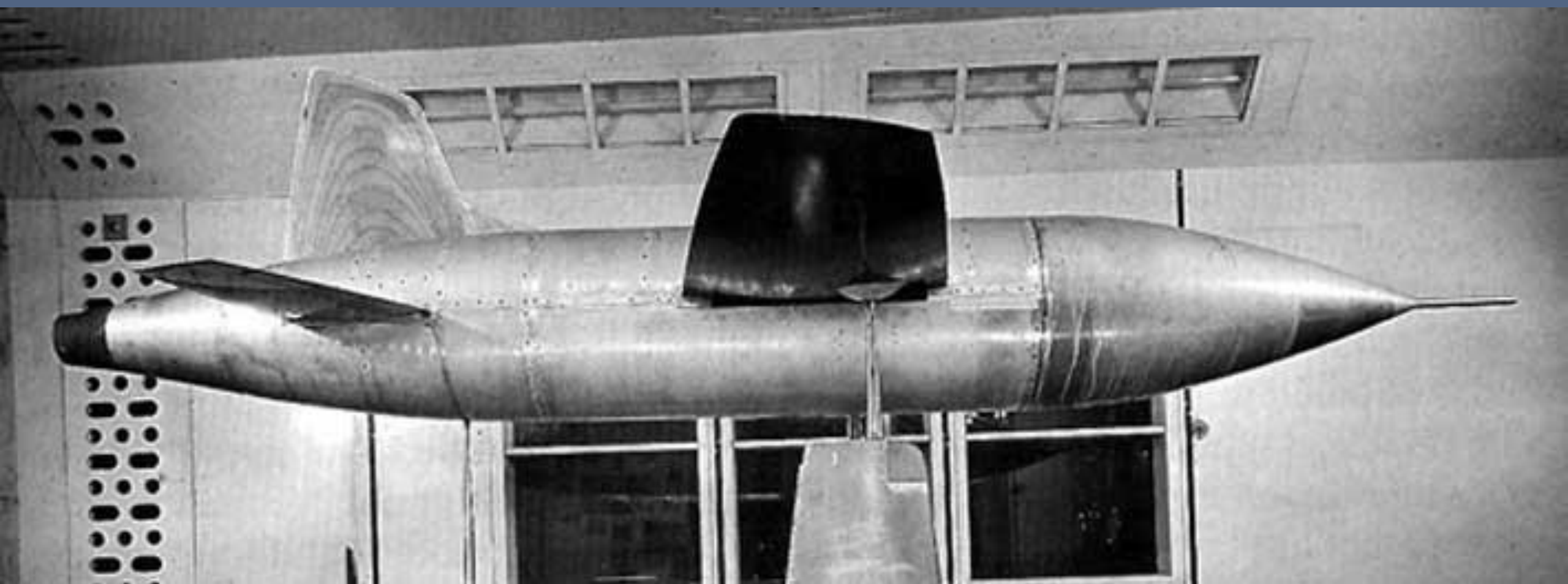














LELUC 010
Subsonique 1944

France	
1944	
Projeteur de bombes	1000 kg
Longueur	10,50 m
Envergure	10,50 m
Hauteur	1,50 m
Poids à vide	1000 kg
Poids maximal	2000 kg
Vitesse maximale	1000 km/h
Plafond	10000 m
Portée	1000 km
Armement	1000 kg de bombes
Equipage	1 pilote



