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THE MACMECHEN-KAMP AIRSHIP

Probably the least known rigid airship ever to be built was the 1915 American-designed, British-built MacMechen-Kamp airship. Except for the description which follows, very little information is to be found. Even its ultimate disposition remains shrouded. Hence this story is not complete, but serves to document the meager data that is available.

The MacMechen-Kamp airship was designed by Walter K. Kamp of New York, and was promoted by Thomas R. MacMechen, a journalist, founder of the monthly periodical The American Aeronaut, and president of the Aeronautical Society of America in 1914-15. The proposed airship was small, only 236 feet long and 28 feet in diameter. With 100,000 cubic feet of hydrogen carried in 14 gas cells, it was to carry a four man crew and sufficient fuel for a 300 mile range. Through a cable drive system one 75 horsepower ENV engine and one 125 horsepower Green engine drove two propellers mounted on the side of the hull. The engines and crew were to be carried in a car mounted underneath and extending about forty per cent of the length of the hull. The framework was laminated Canadian Fir, made up of 29 transverse frames and 32 longitudinal girders in addition to numerous spirally wound fir strips. The ship had a "dropped" bow; that is, the center line of the ship curved downward at the bow, placing the center of the bow hemisphere several feet below the center line of the hull behind it. The tail was cruciform sweeping well aft of the hull, the trailing edges divided in swallow-tail fashion. In addition to the control surfaces on the tail, monoplane elevator surfaces were fitted against the side of the hull just forward of and slightly higher than each propeller.

Probably the most unusual feature was the method of handling the gas. It was proposed that the ship ascend and descend without the loss of gas by using a novel method of controlling expansion. Each of the two engines was to drive a nine pound aluminum blower used to blow cold air into the "compartments" to cool the gas, decreasing its volume and lift. Alternately, warm exhaust gas from the engines could be blown into the "compartments" to heat the gas, causing it to expand and increase its lift. To eliminate all danger of fire, the exhaust gases were first to be carried through a special copper wire and asbestos spark chamber to catch all hot particles.

The designers proposed that the airship be utilized as a "Zeppelin destroyer." MacMechen envisioned it the aerial counterpart of the seagoing destroyer, attacking the giant Zeppelin, which he saw as the dreadnought of the air. It is not known what form of armament was proposed for the airship, but it was predicted to have a top speed of 60 miles per hour, and to be easily navigable so that it would have little difficulty maneuvering about the giant Zeppelins for offensive purposes.

The airship as described, sounds like one of the multitude to be proposed in the early part of the century. Many inventors with a variety of ideas had invented THE airship only to find airship construction costly, and neither private investors nor governments willing to invest large sums of money in untried concepts or constructors of unknown ability or intent. But such was not to be the case with T. R. MacMechen. Armed with his drawings and backed by his designer, Kamp, he traveled to England, formed a corporation and started construction. It was reported that his corporation had five million dollars capital, and that he was attracting the attention of many prominent men in England.¹

By early spring, 1915, a shed 266 feet long, 50 feet wide and 60 feet high, of corrugated sheet metal over a wooden frame, was being built just outside London. As soon as its construction was sufficiently advanced preparations for the erection of the airship were made. Eleven large octagonal "wheels," about 23 feet in diameter, supported by eight spokes radiating from a center hub, were built. Inside the shed a number of wooden A-frames, about sixteen feet high, were set at sixteen foot intervals. The "wheels," mounted on a tubular shaft carried in bearing surfaces on the tops of the A-frames, formed internal jigs upon which the frame of the full was to be assembled. This unusual method of erection was not original with MacMechen and his team. It originated with the Schütte-Lanz Company at Mannheim, Germany, in 1911 when they built their first wooden rigid airship, the SL-1. That ship was built with a geodetic type construction later found in the World War II Wellingtons, but subsequent Schütte-Lanz airships had a more conventional structure and the usual assembly frames were not used again. At the time the SL-1 was being built MacMechen was writing articles on airships and aerial warfare, several times collaborating with Carl Dienstbach, a journalist who had written much on the German airship industry. It is suspected that, through Dienstbach, MacMechen drew from the Schütte-Lanz experience in setting up his assembly frames.

Unlike the SL-1, MacMechen's airship had a more conventional hull structure, using transverse frames and longitudinal girders. The frames, actually sixteen sided polygons, were made of Canadian Fir capstrips with ply webs liberally provided with lightening holes. The corners of the polygon were reinforced with plywood gussets and fitted with a square cross section strut, one foot long, pointed toward the center of the frame. On the main frames, of which there were fourteen, a cable was fitted to the inside end of each of the radial struts and led to a central steel ring. When tightened these cables formed a bulkhead separating the gas cells and strengthening the frames. The intermediate frames were constructed like the main frames except for the absence of radial wiring and a variation in girder lightening hole pattern. The frames in the extreme bow and stern were built with girders like the main frames but carried the radial struts to the center of the polygon for extra stiffening.

The transverse frames were tied together by longitudinal wooden girders fitted at the outside edge of each corner of the polygon and at the inner end of

¹"The MacMechen-Kamp Zeppelin Destroyer," Aeronautics, 30 May 1915, p. 84.

the radial strut. Called girders by MacMechen, the longitudinals were actually square cross section strips of Canadian Fir which might have been considered as the upper and lower capstrips of a girder had there been a web connecting them. At the extreme bow they were supported by struts fitted at 15 inch intervals, but such strengthening was not provided throughout the hull. Inside the inner longitudinals, fir strips were spirally wrapped in two directions, forming an X in each rectangular space between adjacent transverses and longitudinals. Where these spirally wrapped members crossed one another, and where they crossed the longitudinals at the inner end of the radial struts, they were secured by lashing with Norwegian twine. No diagonal wiring was provided, the spirally wrapped strips serving the functions of such wiring. The mantle space between the outer longitudinal girders and the spirally wrapped members was undoubtedly the "compartment" into which cool or warm air was to be blown for gas expansion control.

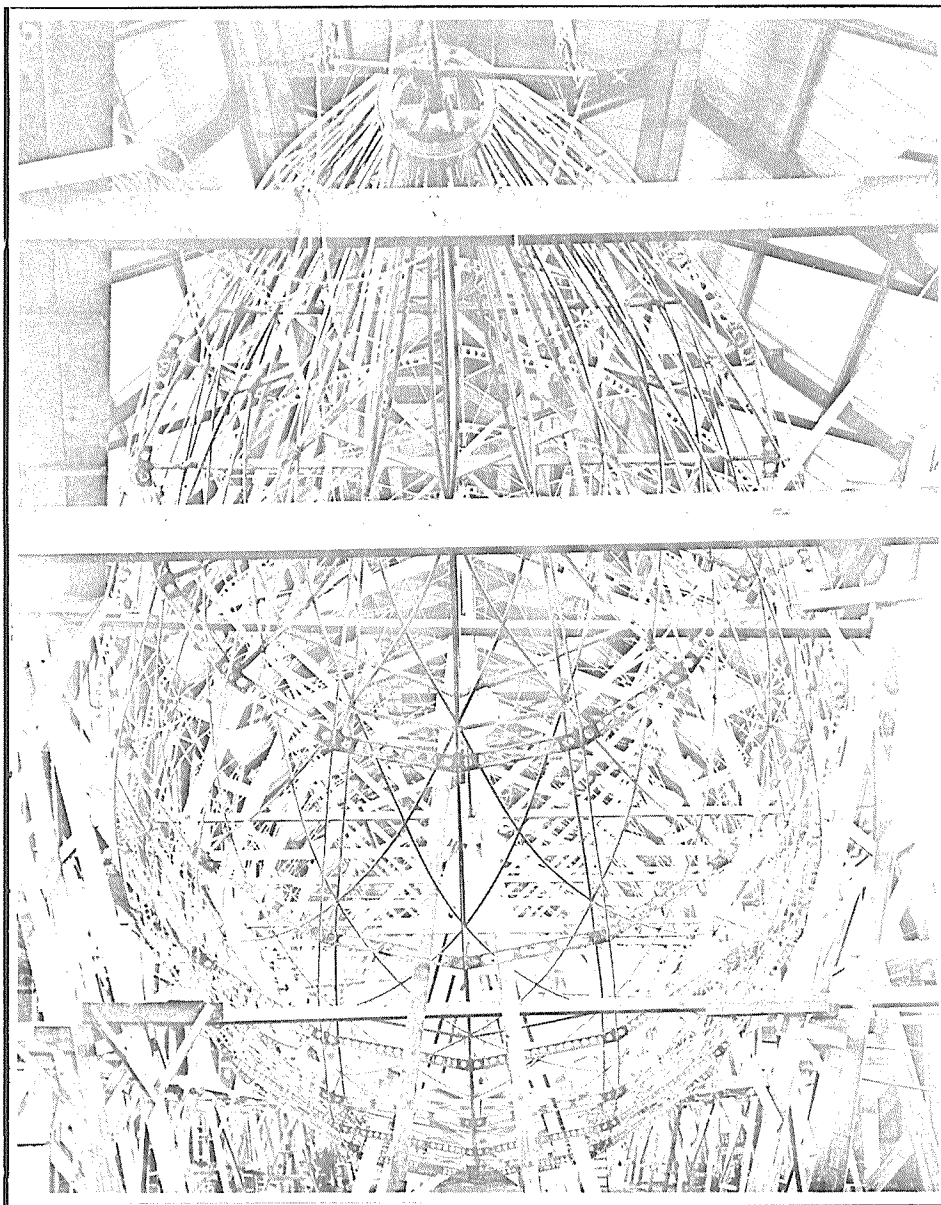
When the hull framework was completed the assembly frames were disassembled and removed, leaving the extremely light framework hanging in long straps running under the hull and leading up to cables attached to the shed roof. The framework of the car was then attached.

On the 11th of November 1915 a representative of the United States Naval Attache's office in London visited the shed to examine the airship, which had progressed to the point where the assembly frames had been removed and the car was being attached. In a brief report² written in a generally pessimistic vein, the unidentified naval officer considered the weight to have been cut down to a rather dangerous extent and predicted that the ship would experience excessive vibration from the engines, but vindicated MacMechen with the reminder that the ship was designed only as a demonstration of the type.

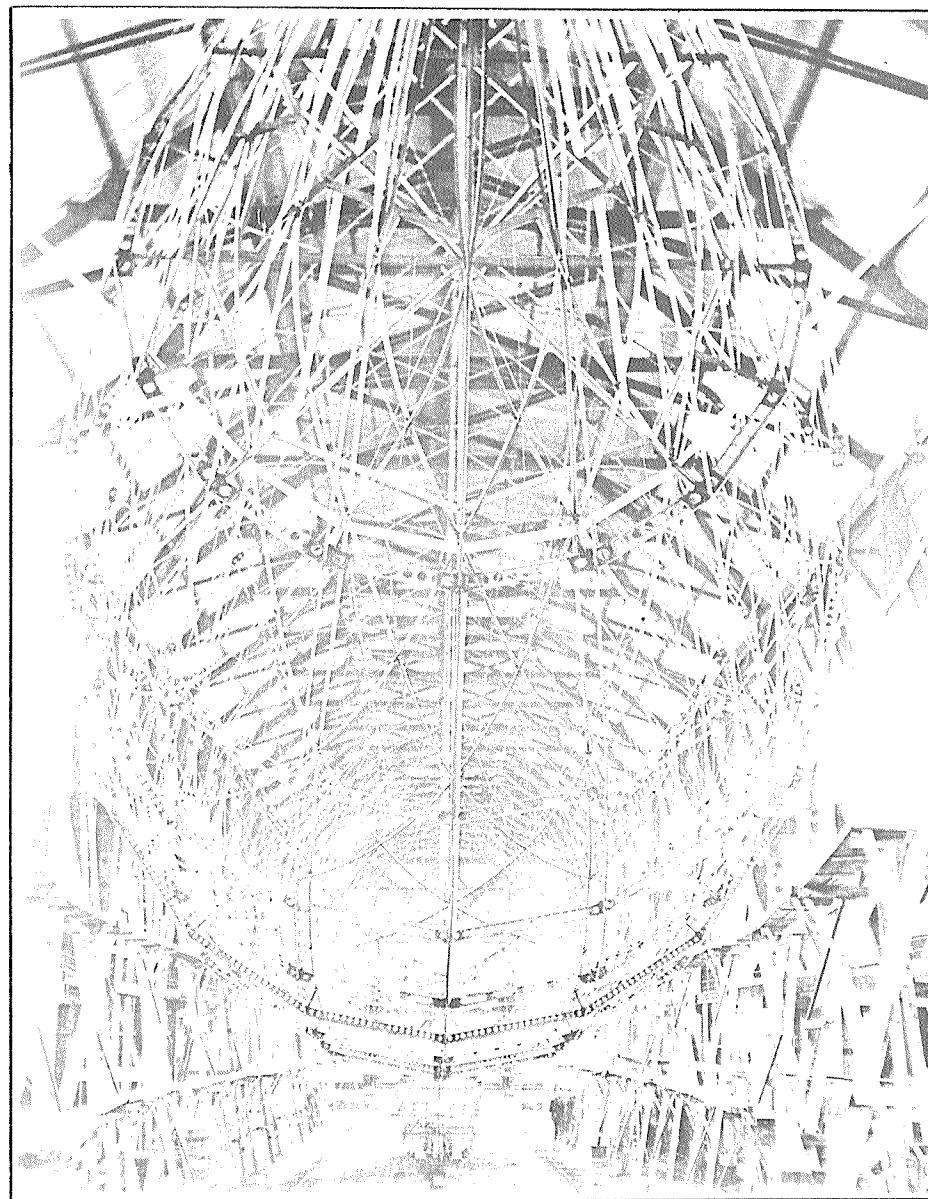
About this same time the Admiralty took over the construction of the airship and the entire project became shrouded in mystery. MacMechen, relieved of further responsibility, returned to the United States and was to present plans for a new airship to the U. S. Navy. Whether he did this is not known, but the name MacMechen has no place of prominence in the early history of the U. S. Navy rigid airship program. The Admiralty delegated responsibility for the airship to Marshall Fox, the ship being known as the Marshall Fox Airship thereafter. The name Marshall Fox appears a number of times in the history of British airships but research has failed to further identify the man or the company he represented. Although it was the Admiralty's practice to contract for the construction of rigid airships with large manufacturing firms, usually shipbuilding companies, the name Marshall Fox does not appear, for instance, in the registry of the Federation of British Industries. As for the airship, it is not known whether it was ever completed but it is doubtful that it ever flew. The only hint to its life under the Admiralty comes from the brief testimony of Captain C. Gilbert More, RAF, before the U. S. Navy's General Board on 23 May 1918. Captain More said, "We are working on a miniature Zeppelin, but it is no good." ³

²"MacMechen Airship," Office of Naval Intelligence Report, 12 November 1915. (This report is now filed in the National Archives, Record Group 38.)

³"Aviation Abroad," General Board Hearings, 1918. Hearings on 23 May 1918. (Gen. Board Hearings may be found in Naval Records Center, Arlington, Va.)

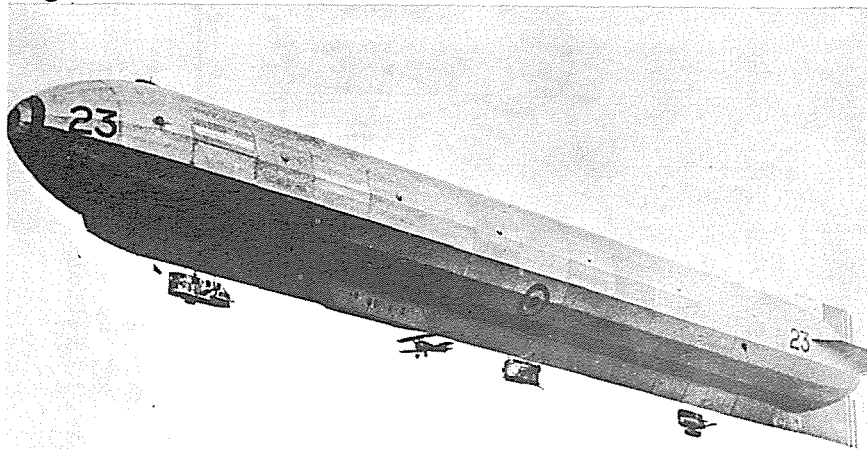


View under stern of MacMechan-Kamp Airship after completion of hull framing. The external erection frames are still in position. (National Archives)



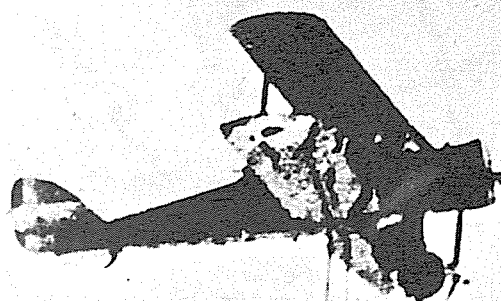
After removal of erection frames and attachment of control car framing. Straps may be seen, suspending the hull from the hangar. (National Archives)

THE MACMECHAN-KAMP "ZEPPELIN DESTROYER"

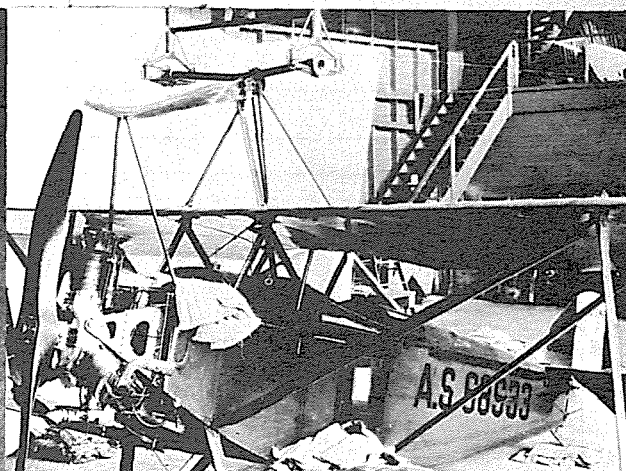


The British R.23 prepares to release Lt. R.E. Keyes in his Sopwith Camel over the Pulham airship base, Summer, 1918.

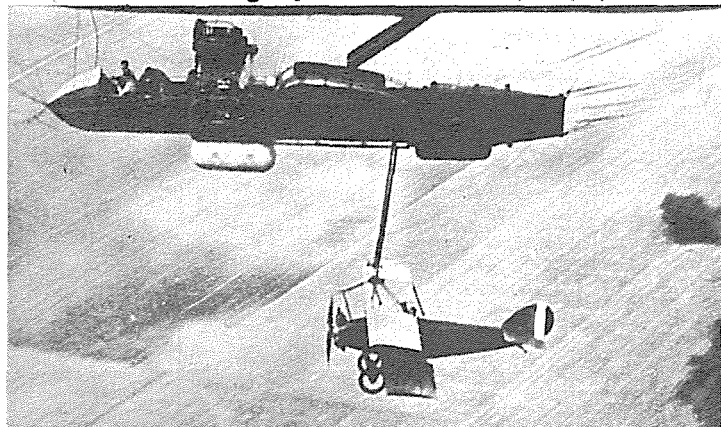
(At right) Lawrence Sperry plays 'tag' with Lt. Clyde V. Finter's DH-4 over Mineola, L.I. November, 1922.



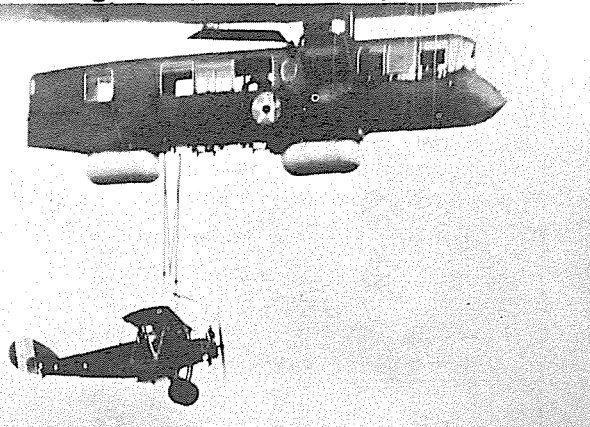
Lt. Stoner experiments with airplane/airship contacts at Langley Field in 1923. (r) Detail of



Sperry "Messenger's" hook and trapeze arrangement, McCook Fd., Summer, 1924



Lt. Finter is lifted for a "drop" at the Pulitzer Air Races in October, 1924. Lt. Frank McKee is handling the TC-5.



The trapeze arrangement of the TC-3 allowed Lt. Finter to make the first successful hook-on, at Scott Field, Ill., Dec. 15, 1924.