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POPULAR AVIATION



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In Canada 30c

The Development of Aircraft Carriers

by ALFRED CELLIER

A short history of the rapid development in Navy airplane carriers, the ships that carry the "eyes" of the Navy to the battle zones.

FROM time immemorial, navies have always sought in wartime for information concerning a hostile fleet in respect to its strength and disposition. Such information is of vital importance in both offensive and defensive tactics.

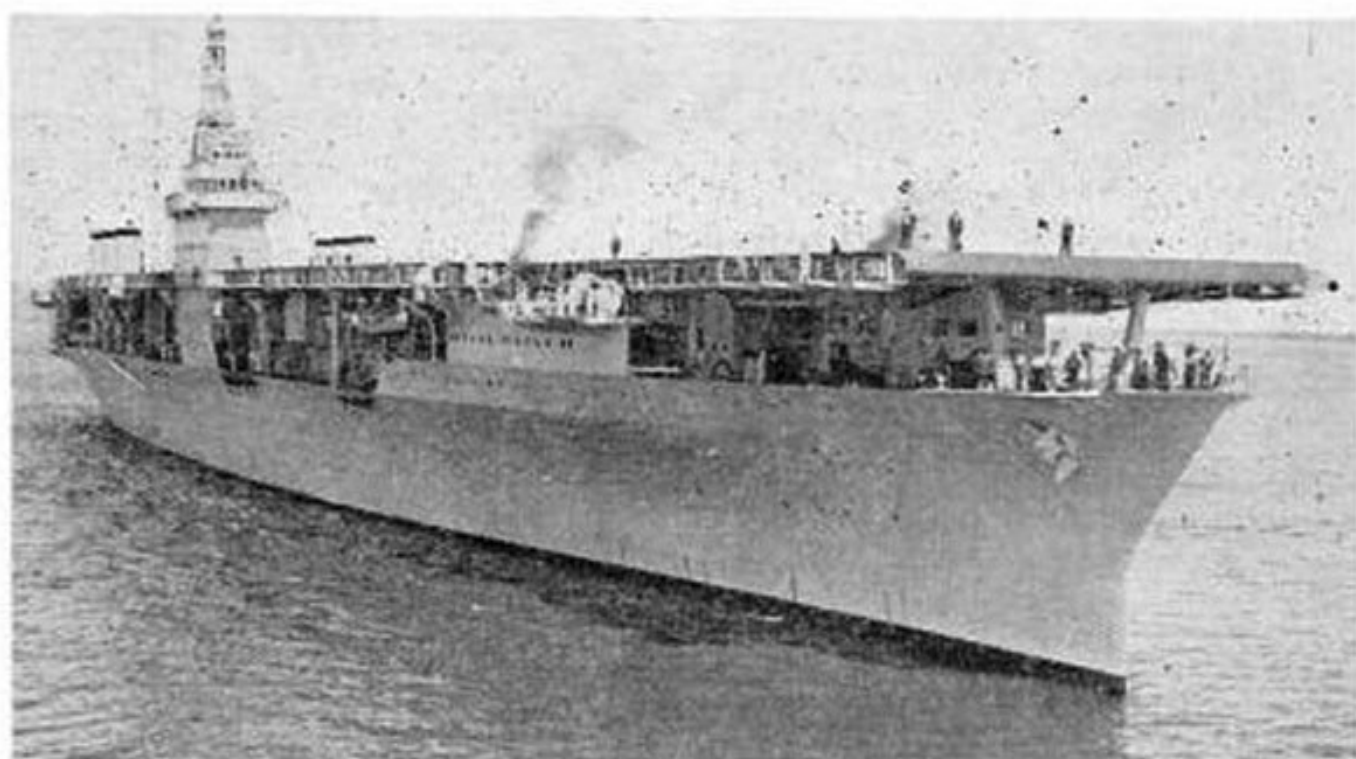
During the Spanish-American War, at Santiago, a balloon on shore was used to find out whether the Spanish fleet was in the harbor, after all other methods failed. And even before this, as early as the Civil War, balloons were employed for observation posts.

It remained for the World War, however, to demonstrate the value of the aircraft carrier, for by this time, heavier-than-air craft had been adopted by the various powers as an integral part of their naval forces. Prior to the World War, crude experiments had been carried out, flying from improvised decks on surface vessels, and also in hoisting seaplanes from comparatively smooth water. The difficulty with the improvised deck, however, lay in the inability of the parent ship to retrieve its airplane and in having a part of its main armament covered in the event of an immediate action. Nevertheless, these experiments conclusively proved the feasibility of carrying aircraft to sea, where they could be used for spotting purposes.

The first experiments along this line were carried out at Hampton Roads, Virginia, when Eugene Ely successfully flew a fifty horsepower Curtiss landplane off a hastily built platform on the cruiser Birmingham, November 14, 1910. Again, on January 18, 1911, it was Ely who made the first successful landing on the deck of a vessel, on the cruiser Pennsylvania which was then lying at anchor in San Francisco Bay.

With the organization of the first naval air detachment, 1913, the airplanes were embarked on a naval collier and transported to Guantanamo, Cuba, for fleet operations where they made many notable flights. In January, 1914, the old battleship Mississippi was turned over to the aviation detachment, and when the fleet was ordered to Mexico for the occupation of Vera Cruz, it carried two seaplanes which were hoisted in and out when reconnaissances were necessary. This ship was not, however, fitted with a flying deck.

Meanwhile, the British Navy had been carrying out similar experiments and fitted out the battleship Africa with a platform over the forward gun turrets in 1911. Lieutenant C. R. Samson, later famous for his war exploits, successfully piloted the first plane



A modern aircraft carrier with its broad landing deck, bifurcated stacks and other special equipment for handling naval aircraft.

launched from shipboard. A year later, the battleship Hibernia was similarly fitted out and in 1913, the light cruiser Hermes was equipped with some seaplanes and accompanied the Grand Fleet on the maneuvers in July of the same year.

With these experiments as a background, when the war broke out over Europe in August, 1914, the British Admiralty immediately proceeded to adapt and convert certain vessels for seaplane and aircraft carriers. The first of these to be taken over were the cross-channel steamers Riviera and Engadine in August, and afterwards, the cross-channel steamer Empress, in October. These were utilized then for seaplane carrying only, as landplanes could not be launched from them.

Meantime, the old cruiser Hermes had been ordered in to refit and appeared again, in the middle of October, with a specially built "flying-off-deck." However, the operations of this first true aircraft carrier were not a notable success, for two weeks later she was torpedoed and sunk while on patrol duty in the North Sea.

About the time that the Hermes had been ordered in for conversion, the Admiralty had decided to take over the old Cunard liner Campania, and to fit her out with a flight deck. Her speed of twenty-two knots would allow this ship to keep station with the Grand Fleet. The Campania had a gross tonnage of twenty thousand tons and plenty of room was available for the storage of aircraft and the machine shops for the upkeep of the machines. She appeared ready for service on April 17, 1915, with a one hundred and twenty-foot flying deck and a comple-

ment of eleven seaplanes and one landplane. She was immediately assigned to the Grand Fleet, then at sea.

In the meantime, the converted merchant steamer, Ark Royal, of seven thousand four hundred and fifty tons, with a speed of eleven knots, had been commissioned. The Ark Royal had a straight flight deck, the sheer of the vessel having been cut down. A hangar was provided in the cargo hold, capable of accommodating ten airplanes.

Like most carriers of that early period, the bulk of these airplanes were seaplanes which had to be hoisted in and out. On January 13, 1915, the Ark Royal was ordered to the Dardanelles where she was to see a year of service or until the final evacuation of the Gallipoli whence she left for Salonika. The Ark Royal was soon followed by the Ben-My-Chree.

The next vessel to be converted to an aircraft carrier with a flying deck was the Vindex, which was a former Isle of Mann passenger steamer. The Vindex was commissioned in September, 1915, and was followed by the Manxman, another steamer similarly fitted. Then came the Furious, a battle cruiser which was being built for Brazil and which was seized upon the outbreak of war.

The Furious appeared with two flying decks, one forward and one aft. The object of this was to take off from the forward platform, while the rear deck could be utilized for retrieving the airplanes. The Furious was followed by the Pegasus, the Nairona, and the Raven. The Vindictive was the final carrier to appear during the war period, while two others, the Argus and

Eagle, were nearing completion but did not get to see active service.

Both before and during the time that the flying deck became a reality, the seaplane carriers took their broods on many adventures, particularly along the German coast, where raids were made on the Zeppelin sheds. Each such operation necessitated the hoisting in and out of the seaplanes and, on many occasions, the seaplanes were damaged or unable to take off in the heavy seas. Other operations, during the Dardanelles campaign, allowed the early carriers to operate in quiet waters and also to shore base their landplanes. During these periods they spotted for the guns of the fleet against land batteries.

The need for naval aircraft in other parts of the widely scattered war zone caused other surface ships to be used temporarily on such missions and, off the coast of East Africa, the former ocean liners Himalaya, Laconia, and Mancina carried a seaplane in temporary hangars on their decks. The hangar of the latter, operating far from her home station when assigned as a seaplane carrier, was improvised from bamboo and grass, such as was to be found along the jungle-infested coastline, but this did not diminish her qualities.

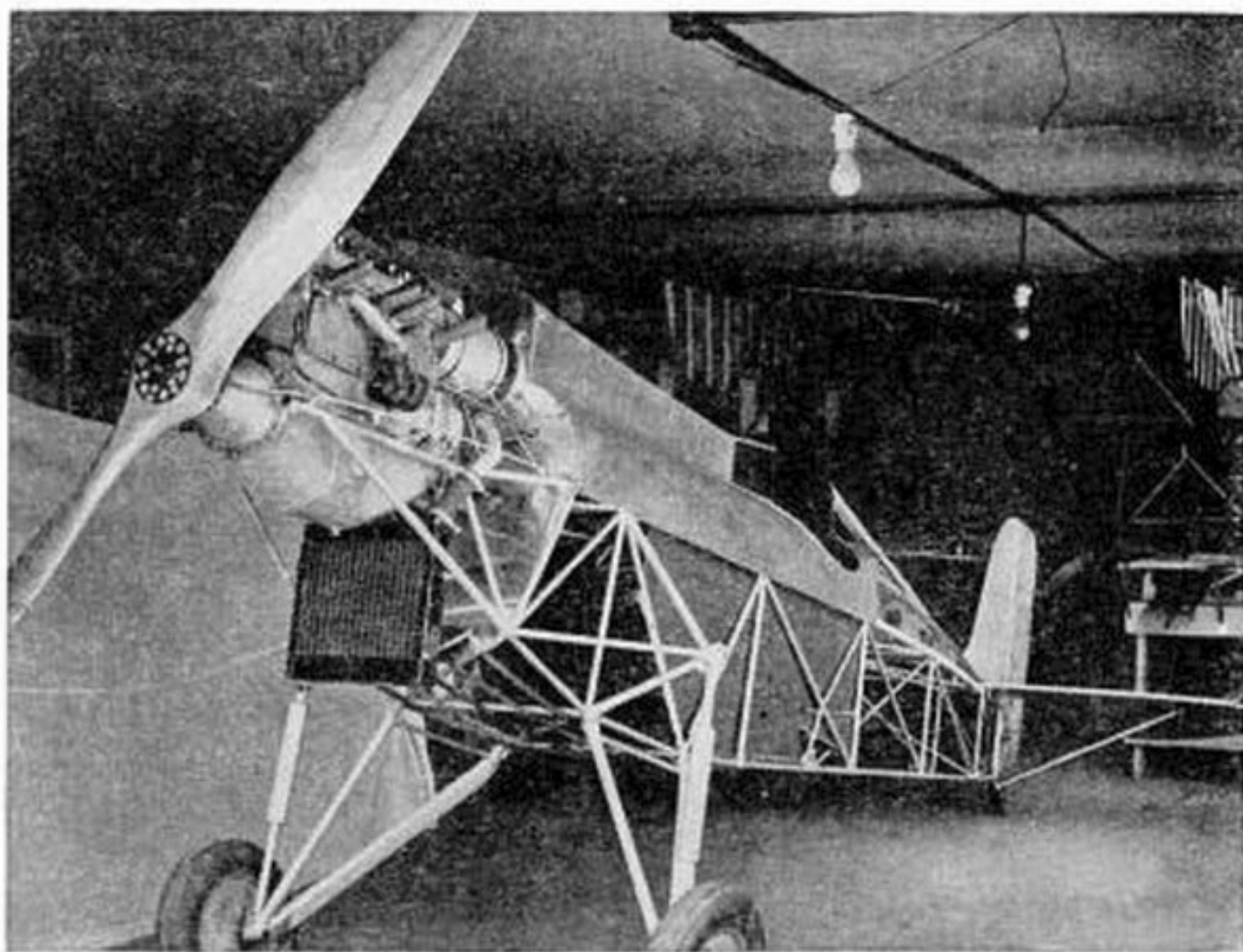
Gradually, the flying deck was evolved. Operations from these airplane carriers are of such historical importance that mention of their service cannot be overlooked. The first landplane to be flown off the Campania was a Sopwith seaplane which had wheels fitted under the floats. The Campania was steaming into the wind at seventeen knots when Flight Lieutenant W. L. Welch took off.

The run took up one hundred and thirteen feet when the plane gracefully soared into the air, and the wheels were dropped. It was then necessary to land alongside the parent vessel and be picked up. This sort of thing continued for some time but gradually the planes were received on board in the same manner. At the end of 1915, the Campania was again ordered back to the shipyards to have a longer deck provided so that two-seater reconnaissance airplanes could operate from her.

Many attacks were carried out against Ostend and Zeebrugge in which airplanes spotted for the fleet during 1915 and 1916, while operating off airplane carriers. But it remained for the Battle of Jutland, in May of the latter year, to see the supreme test of the aircraft carrier. Fate intervened that day, which was the day of the last big naval battle of the war, and the aircraft carrier did not take any part in it.

This interesting article will be concluded next month. In the next article the author will relate the part played by aircraft carriers in the Battle of Jutland.

A Pre-view of the New Corben Plane



This is the new Corben Super-Ace which is propelled by a Converted Ford "A" engine. Note the new Corben conversion.

THE monoplane shown above is the new Corben "Super-Ace" which is now undergoing flight tests in Madison, Wis. Further details will be published when these tests are completed.

The new ship is powered by a Corben converted Model "A" Ford engine which is described elsewhere in this is-

sue. This ship can be produced very much more economically than a plane equipped with a standard aeronautical engine and uses ordinary automobile gasoline instead of the high-priced aviation gas.

The combination is the result of much study by Mr. Corben and his associates.

A New Slant on Aviation Laws

THE Air Commerce Act of 1926 does not in terms provide for a forfeiture of planes for violation of its rules. On the other hand, it does make certain penalties therefor a lien upon the offending craft, and, under the construction placed upon this provision by the courts, its enforcement in effect amounts to a forfeiture.

Obviously, the point here involved is of vital interest to aircraft owners, manufacturers, dealers, and others who in any way rely upon aircraft for the security of obligations. The application of this rule, and the reasoning upon which it is founded, is illustrated in a striking manner in *United States vs. Batre*, U. S. Circuit Court of Appeals, Ninth Circuit, 69 F. (2d) 673, which arose under the following facts:

Here one Scholey, as owner of a certain biplane, flew it from Mexico to Florence, Arizona, the latter not being designated by the Secretary of the Treasury as an airport of entry. It was not a forced landing, and a few days later the plane was seized by the inspectors of customs for violation of the Air Commerce Act, in respect to crossing the international boundary.

The government filed a libel in rem to collect the penalty against the plane,

and one Batre intervened as the holder of a chattel mortgage upon the craft in the sum of \$4,000. Batre thereupon prayed that the mortgage lien be adjudged superior to the lien for the penalty, setting up that he had no knowledge that the plane was being used in violation of the Air Commerce Act.

The lower court imposed the statutory penalty, declared it to constitute a lien upon the plane, and ordered the latter sold and the proceeds to be applied as follows: First, the costs of the proceedings; second, the payment of the mortgage; and third, the payment of the penalty assessed by the government. From this judgment the government appealed, and the higher court in reversing same reasoned, in part, as follows:

"If the penalty is incapable of enforcement, which is the result if the decision of the lower court is affirmed, then this provision affords no aid in preventing violation of the law. It can readily be seen that if a lien created by a chattel mortgage is held superior to this penalty lien those so disposed can always evade it by mortgaging the airplane up to or beyond its actual

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