

DECISIONS OUT OF JUTLAND

By Scot MacDonald

'It is impossible to resist the admiral's claim that he must have complete control of, and confidence in, the aircraft of the battle fleet, whether used in reconnaissance, gun-fire or air attack on a hostile fleet. These are his very eyes. Therefore the Admiralty view must prevail in all that is required to secure this result.'—Winston S. Churchill.

THOUGH THESE WORDS were written in 1936 as a private citizen, Winston Churchill earlier, as First Lord of the Admiralty, advocated the development of aviation in the navy while the aeroplane was still young. He was partially responsible for placing the new machines aboard British ships shortly after the first decade of this century. As a result, during World War I Great Britain developed the aircraft carrier and built a small number of them before any other country had a single ship designed for the operation of planes at sea.

Heavier-than-air craft had its start in Great Britain four-and-a-half years after Orville Wright launched the world's first successful aircraft at Kitty Hawk. Mr. Alliott Verdon-Roe completed constructing his plane at Broadside, England. Modeled after a Wright brothers' aeroplane, it was successfully flown on 8 June 1908.

On 2 March 1911, three Royal Navy officers and one Marine officer began taking flying instruction given by a civilian enthusiast. The first of the four to solo was Lt. Charles R. Samson who, in the next ten years, built a distinguished reputation for being a flamboyant man of action.

In 1912, Horace Short produced Britain's first seaplane (Churchill has been credited with coining this one-word description of the aircraft) and it was successfully flown by Samson. Only months earlier, Samson demonstrated the potentials of naval aviation when in December 1911, he test-launched a Short S.27 biplane from rail platforms on the foredeck of HMS *Africa* while the warship was at anchor at Chatham. He made a safe landing alongside, using flotation bags strapped to the wheels of his plane.

Four months later, in May 1912, the first British flight from a moving ship was effected when Lt. R. Gregory, one of the "original four," took off from a temporary flight deck of the battleship *Hibernia*. The ship was steaming in Weymouth Bay at a speed of 10 to 12 knots.

By this time, France already had an Air Corps, consisting mostly of landplanes. Between 1912 and 1914, she experimented with seaplanes aboard the converted cruiser *Foudre*, previously used as a mine ship, but apparently lost interest before any notable advancement could be made. The ship could not house an effective number of aircraft aboard; the rest were

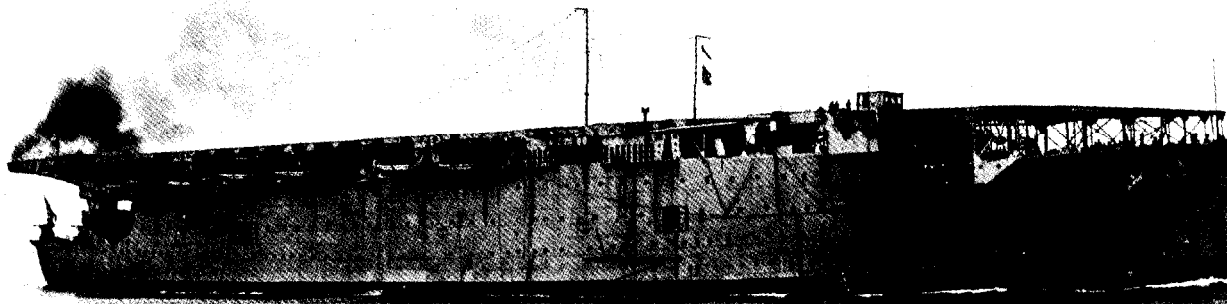
hanged on the beach at Frejus. But in number of landbased craft in the military inventory, and in pilots trained, France was the undisputed leader in pre-WW I years.

Germany believed her future lay in the development of lighter-than-air craft, eschewing experiments in sending heavier-than-air craft to sea. Her answer to war at sea was the U-boat, supplementing the High Seas Fleet, and she used it effectively in the turbulent years ahead. She did develop landplanes, some with extraordinary achievement, but it was with Count Ferdinand von Zeppelin and his airship designs that Germany placed her national trust.

Italy, at that time (and for many years after), did not believe carriers were necessary for her defense. The prevailing opinion was that the country was so centrally located it was virtually a land base from which the Mediterranean could be controlled.

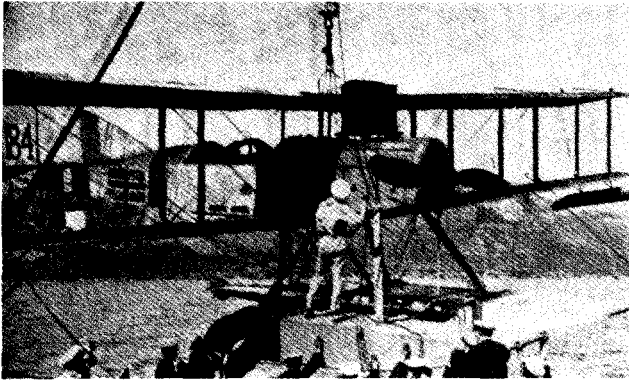
Japan developed aircraft carrier designs, but details of construction were not revealed to the rest of the world for decades.

The United States, after originally inventing the aeroplane, did not during WW I aggressively push their op-

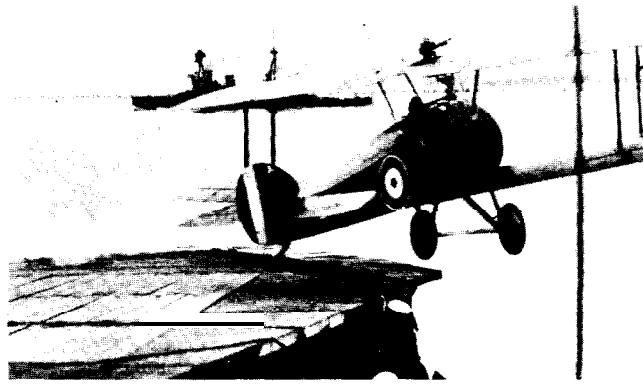


CONSIDERED BY MOST HISTORIANS to be the world's first true aircraft carrier, HMS Argus had flush deck installed. Completed toward

the end of the war, she never saw action. Tests conducted during construction and post-war operations influenced design of later carriers.



ON HMS BEN-MY-CHREE during the Dardanelles campaign, a Short seaplane is lifted over the side. Double-acting ailerons on both wings.



A SOPWITH CAMEL launches from converted HMS Pegasus in 1918. Note machine gun mounted on wing. Camels were used extensively.

eration at sea. True, the Navy had equipped at least three ships to operate aircraft by installing catapults on them, but the catapults were removed during the war. On the whole, the military was not encouraged and seldom financed; civilians had little motivation for building carriers.

With France the undisputed master of the landplane, Germany the acknowledged expert in lighter-than-aircraft, and the whole of Europe feeling the faint stirrings of unrest as early as 1912, Great Britain was intent on catching up with and overtaking, if possible, France and Germany in their respective aeronautic specialties.

As war years approached and the German submarine force grew in potential, Britain, as the major sea power, instinctively sought ways of adapting aeroplanes for operations with the fleet while out of flying range from home bases. Her success eventually gave her a weapon more powerful than those developed by competing powers.

The genesis of the British aircraft carrier can be plotted with simplicity. At first, attention was directed to the launching of aircraft from water. Both hydroplanes and flying boats were studied, tested, and developed.

Later, experiments were made in launching planes from ships, followed almost immediately with efforts to successfully retrieve them at sea.

Eventually, the performing advantages of the light landplanes over the awkward hydroplanes led to efforts to develop vessels which could take the landplane to sea. When these achieved success, the forerunner of modern aircraft carriers was born. The gestation period was surprisingly

short for such a complicated ship, but its parturition was forced by the pressures of wartime and an instinctive fight for survival.

Britain's first step toward carrying aeroplanes to sea was to establish an official air arm. On 13 April 1912, the Royal Flying Corps was constituted by Royal Warrant and, on 19 June, a Central Flying School was opened at Upavon Downs. Both the Corps and the School were planned for the centralization of aviation activities in the Royal Navy and the "Military."

Between 1912 and the outbreak of hostilities in August 1914, Europe became increasingly restless. In October 1912, following the establishment of the Corps, Britain commissioned a number of naval air stations for coast guard duty. One was placed at Cromarty, Scotland, and the remaining three in England, by the Channel coast at Calshot, Yarmouth, and Felixstowe. Two others were already in operation, one at Eastchurch and the other on the Isle of Grain. The sites were selected to form a chain so that planes could fly from one station to the next without requiring an interstop for refueling.

British naval aviation moved more closely toward the carrier concept when a wheeled launching platform was installed in the cruiser *Hermes* in June 1913. At first, two seaplanes operated from the ship. Later, she was capable of carrying a third. By October 1914, *Hermes* had been fitted to handle ten.

In the summer months of 1914, Prime Minister Lloyd George appointed Winston Churchill First Lord of the Admiralty, comparable to the

Secretary of the Navy in the U.S.

In a series of sudden decisions, Churchill immediately called out of retirement brilliant Lord Fisher, a cantankerous admiral who advocated great changes in the Royal Navy. He was made First Sea Lord (i.e., CNO). Almost at the same time, Churchill elevated the bellicose Sir John Jellicoe to command the Home Fleet, bypassing several senior officers en route.

Aviation fascinated Churchill. He flew at every opportunity and encouraged the development of aircraft for the Navy's use. In this respect, he was militant. In the words of Sir Sefton Brancker, then Deputy of Military Aeronautics, "The first sign of Churchill's policy was his sudden announcement that the Naval Wing of the Royal Flying Corps had become the Royal Naval Air Service—this without any reason or warning to the War Office."

His most startling decision was made shortly before war was declared. On his own initiative, Churchill called up full mobilization of the Navy, risking a veto by the Cabinet and not waiting for a signature from King George V. The entire reserve strength went on active duty; the ranks of naval aviation broadened with other units of the fleet. It was one of the few times in history that a defending nation's navy was adequately prepared upon the declaration of war.

Events moved swiftly. On 28 June 1914, the Austrian Archduke, Franz Ferdinand, was assassinated by Serbian students at Sarajevo. On 17 July Churchill concentrated the fleet at Spithead for review and maneuvers. All available naval aircraft took to the air: 17 seaplanes and two flights

of aeroplanes. On 28 July Austria-Hungary declared war on Serbia. Russia sided with the Serbs and Germany mobilized. On 1 August, the British planes at Eastchurch were tuned up. August 4th, England declared war on Germany, and Germany declared war on Belgium.

At that time, Great Britain had only one vessel that could even remotely be referred to as an aircraft carrier, the *Hermes*. Her wartime activity was cut short, however. On the evening of 30 October 1914, she was torpedoed and sunk. Fortunately, most of her crew survived.

In short order, an old merchantman was placed in a shipyard and her superstructure converted to carry and launch seaplanes from wheeled trolleys. It was the same type installation used in the *Hermes*. The merchantman displaced 7450 tons, was slightly longer than 350 feet, and had a speed of about 11 knots. This ship, HMS *Ark Royal*, was to prove valuable to the Royal Navy in future years.

In quick succession, other vessels were converted. The former fast cross-Channel packers, *Empress*, *Engadine*, and *Riviera*, were fitted with hangars for seaplanes and equipped with cranes for hoisting aircraft into and out of water. Later, an Isle of Man packet, *Ben-my-Chree*, was refitted for seaplane operations.

Except for submarine activities—which proved deadly in the early years of the war—the German Navy seemed tenaciously timid. The Kaiser adamantly refused to permit the High Seas Fleet to engage the British, so it hung reluctantly to safe ports. There were, therefore, few demonstrations of German belligerence by surface ships at sea. But in the early months, two engagements are notable, for they eventually affected some future designs of Royal Navy ships.

IN SEPTEMBER 1914, the German cruiser *Konigsberg*, skulking in the Indian Ocean, attacked and sank the British cruiser *Pegasus* in port at Zanzibar. She then hid in a maze of channels in the Rufiji Delta on the east coast of Africa. The Admiralty knew her whereabouts, but not exact location. Charts indicated five possible exits for *Konigsberg*, but there was only one ship in the area able to offer chase, *Kinfauns Castle*.

Not far away, on the island of Niororo, a civilian stunt pilot, H. D. Cutler, suddenly found himself commissioned in the Royal Naval Air Service and his two weathered Curtiss flying boats in the Air Service's inventory. He was immediately assigned to locate the cruiser. Only those familiar with the vagaries of war can appreciate the actions that followed.

On his first flight, Cutler had no compass, got lost, was forced to beach on a deserted island and awaited rescue. *Kinfauns Castle* found him. Two days later, his leaky boat repaired, he found the German cruiser deep up a tideway. He returned to the ship and reported. Charts at the home office indicated the water too shallow to support a ship of the *Konigsberg* draft; another recon was ordered by the Admiralty, this time with an observer aboard.

Ten days were lost while Cutler awaited shipment of his second Curtiss; the first now leaked so badly it was unusable. The ship's commanding officer observed during the next flight and confirmed the *Konigsberg's* location.

Sinking of the German cruiser now became an *idee fixe* with the Admiralty. The nearest ship of sufficient size and firepower to do the job was too far away. Days passed, while *Kinfauns Castle* awaited help. Cutler launched again to ascertain *Konigsberg's* continued presence, but shortly

after reaching the tideway, his engine failed. Forced down, he was captured by the Germans. Aerial reconnaissance no longer a threat, *Konigsberg* saw no reason for leaving her safe anchorage.

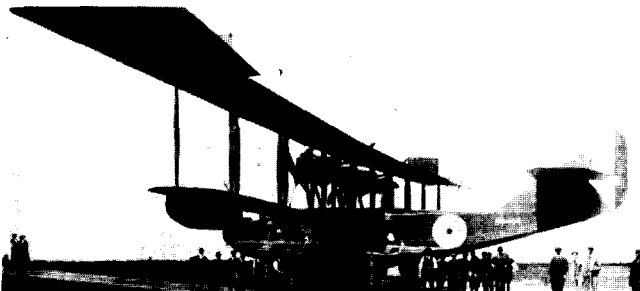
It was not until April that Short seaplanes arrived on the scene to take up Cutler's recon missions. One of the planes was shot down on its initial flight before completing a photo run. Use of the others was limited: they could not reach sufficient altitude for bombing.

Two more months went by before help finally came—in the monitors *Severn* and *Mersey*. They were equipped with Henri Farmans for spotting, but even then their job was not easy. A spirited fight ensued between the ships, interrupted by a five-day interim for necessary repairs to the Farmans. The battle then resumed and eventually, under persistent British gunfire directed effectively by the aircraft, the German cruiser fell.

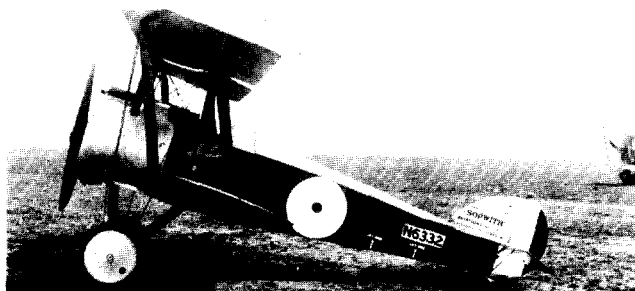
The third German-British naval engagement of WW I has been entered in history books as the Battle of the Falkland Islands.

Over on the China Station, Germany had eight cruisers operating in these and nearby waters. When Japan declared war against the Central Powers, the German squadron, commanded by Adm. Count von Spee, sailed for South America, bombarding Papeete and Fanning Island en route. He was joined by two more cruisers at Easter Island and, in company, they proceeded to the coast of Chile. The Admiralty, intent on destroying this enemy force, assembled as many ships as possible off the southeast coast of South America, and even dispatched three from the Grand Fleet to join in the hunt.

Von Spee, still eager for battle, decided to attack the Falkland Islands. It was a fatal decision: the British



THE FELIXSTOWE F-3, called "Large America," was a British improvement of Curtiss' flying boat built before U.S. entered World War I.



SILHOUETTE of Sopwith Camel shows machine gun installed on engine cowling. Synchronizer developed by Germans permitted this system.

squadron came upon him unexpectedly and sank all the German ships, save one, which managed to escape.

These two incidents—the spotting and sinking of the *Konigsberg* and the Battle of the Falkland Islands—led to the later development of gun-turret launching experiments in HMS *Repulse*, and the construction of Lord Fisher's "Hush! Hush!" ships, *Courageous*, *Glorious*, and *Furious*.

The British turret-launching system was designed and developed in 1917. By early 1918, nine battle cruisers and two light cruisers were equipped to launch seaplanes from systems installed over ships' gun turrets.

Though developed by the British under the pressures of wartime urgency, the idea was first recorded as early as November 1910 when New York Navy Yard quartermaster joiner E.C. Keithley proposed a design shortly after Ely's successful take-off from the *Birmingham*. Keithley's idea was rejected—too advanced for its time—into Navy files and forgotten.

But Fisher's "Hush! Hush!" ships have fascinated naval architects and historians since they were uncovered. Originally, they were built as cruisers of a sort under the war emergency program.

Ships of the Royal Navy describes them as white elephants. "In design," it states, "they suffer from being too strong and too weak. For light cruiser work, they are ludicrously overgunned, while the absence of armour precludes their being employed as battle-cruisers."

Apparently, the First Sea Lord wanted powerfully armed ships of high speed, capable of navigating very shallow waters. Officially described as light cruisers, they were ordered shortly after the sinking of *Konigsberg*. Subsequently, all three were converted into carriers, *Courageous* and *Glorious* after the war. Before *Furious* was commissioned in July 1917, she underwent the first of several conversions and emerged from the shipyard initially as an awkward-looking aircraft carrier.

Britain, in the first months of the war, realized the danger of zeppelin raids on home shores when the Germans became entrenched in Belgium. A series of air patrols in the Channel was immediately established, costing the Royal Naval Air Service in casual-



WW I AVRO 504 series biplanes were used extensively by the Royal Naval Air Service.

ties a number of seaplanes and pilots.

In December 1914, the British planned a raid on zeppelin bases at Cuxhaven. This time, they tried a new tactic, launching the attack with seaplanes based aboard ships. The converted *Engadine*, *Riviera*, and *Empress* were pressed into service, accompanied by a screen of destroyers and submarines. The mission was not restricted to the bombing of the airship sheds, but broadened to obtain as much information as possible on the strength of the German Navy in the area.

On Christmas morning, the ships converged at a point some 12 miles north of Heligoland. An hour later, seven planes took off. En route, they were attacked ineffectively by two zeppelins, and, as they neared the enemy's main naval base, by seaplanes.

Three hours after launching, three of the seaplanes returned to their ships, the mission only partly accomplished. The remaining four were forced to ditch. The crews of three were rescued by a friendly submarine; the fourth was captured by a Dutch trawler.

The seaplanes did not succeed in finding the zeppelin sheds, thus failing that aspect of the mission. But they did bring back valuable information on harbors and the number of German ships in them. The Admiralty was not disappointed.

If any single action gave birth to the concept of aircraft carrier operations, says one noted U.S. naval historian, this raid would qualify. Several similar raids were made in later years of the war, but attention was directed first at the development of seaplanes and then of flying boats. It was not until the last months of the war that Britain fully realized the limitations of seaplane characteristics and the superiority of landplanes. She then began various experiments with true aircraft carrier design.

MEANWHILE, Turkey refused to remain neutral. Influenced by Enver Pasha, the Minister of War, the country was pro-German. On 29 October 1914, Turkish warships, in company with two German cruisers, opened fire on Odessa, Theodosia and Sevastopol on the coast of the Russian Black Sea. Russia declared war on 2 November, and England and France followed three days later. The Ottoman Front was opened.

Churchill soon conceived a brilliant strategy. Had it been successfully carried out, the war could easily have been ended in 1915. Instead, the campaign ended disastrously, and the war dragged on bloodily until November 1918.

He proposed to concentrate British Forces in the Dardanelles, defeat Turkey, and force the Germans and Austrians to deploy troops and machines to that area. The Balkan states would probably join the Allies. And Russia would make a devastating victory in the east; the Central Powers would crumble. It nearly worked.

Though opposed at home and in France, Churchill ordered the Navy into action. As soon as a force of ships was gathered, including *Ark Royal*, the British armada headed toward the Dardanelles to force an entrance.

In *Ark Royal* were six two-seater seaplanes and two single-seater landplanes. Of these, only a Short seaplane, equipped with a good engine, was efficient. The rest could barely get high enough for effective spotting and could launch only when waters were calm.

On 5 March 1915, a Sopwith seaplane, manned by a pilot and observer, took to the air. The plane was to direct fire on a Turkish fort for the guns of the new superdreadnought, *Queen Elizabeth*. It climbed tortuously to 3000 feet and, as the observer readied to call the shots, the propeller fell off. The Sopwith plunged to the sea, under furious fire from the fort. Miraculously, both men were saved.

More catastrophes followed. The assault force, entering the straits, ran into a mine field and lost three battleships. Action was broken off abruptly by the admiral—although other ships had managed to toss the Turkish and German troops into confusion.

Churchill composed a telegram insisting the battle be resumed immedi-

ately, but was dissuaded by the Admiralty on the ground that the officer commanding the situation should be allowed to make his own decisions. For the prospect of a shortened war, later events proved this decision was unfortunate.

At war's end, German General Liman von Sanders, in charge of the Dardanelles during the battle, wrote, "If the orders given at that moment had been carried out, the course of the war would have been changed after the spring of 1915, and Germany and Austria would have been constrained to continue the fight alone."

The attack on the Ottoman Front next centered on Gallipoli, but this proved a worse disaster. The enemy learned of the next tactic and buttressed their defenses. The campaign—doomed to drag on till the following January—was lost.

Samson arrived on the scene, via brisk battles at Dunkirk and Belgium, commanding No. 3 Aeroplane Squadron. *Ark Royal* moved to the Gulfs of Enos, Smyrna and Xeros, providing effective spotting, and returned to her base at Mudros. Fighting was sporadic, both a success and a failure—in about equal measure. The Turks were worthy adversaries.

By late June the threat of German submarines in these waters was real, and *Ark Royal* was retired to the safety of Imbros where she functioned as a depot ship. Barely a week earlier, *Ben-my-Chree* was added to the force. Reconnaissance and spotting flights

were frequent, but the Dardanelles campaign was now a stalemate.

In early August, a major landing was effected by the British at night without opposition. With the enemy forces nearly all routed and running, the general in charge failed to press the attack. In the meantime, reinforcements came up and the battle raged anew, continuing until the British realized the hopelessness of the situation and evacuated, ending the campaign.

Great Britain recognized the deadliness of the German U-boats early in the war. *Lusitania* was torpedoed 7 May 1915 with 1200 lives lost; 139 Americans were among them. Britain searched for a long-range seaplane that was capable of carrying heavy bombloads. In 1914, Sopwith developed a flying boat he called a *Bat*, but it was inadequate.

A year later, Cdr. J.C. Porte was given command of the Felixstowe naval air station. He took up the problem, started with Curtiss flying boat designs, added improvements, and finally produced an operational craft that weighed between four-and-one-half and six-and-one-half tons. As Porte described them, they "carried sufficient petrol for work far out from land and big enough bombs to damage or destroy a submarine otherwise than by a direct hit." Called *Large Americas*, they were operational by the spring of 1917.

Until 1915, vessels converted for aviation at sea were designed as seaplane tenders. This year, a new ex-

periment was tried and proved successful. The Isle of Man packet, *Vindex*, was refitted to launch landplanes as well as seaplanes. A 64-foot-long deck was mounted on the ship, and a successful flight from it was made on 3 November by a Bristol *Scout*. The *Scout* seaplane was equipped with wheels which dropped off as the aircraft took to the air. It made a water landing, taxied alongside the ship, and was hoisted aboard again. Refitted with wheels and refueled, the plane was once more ready to fly.

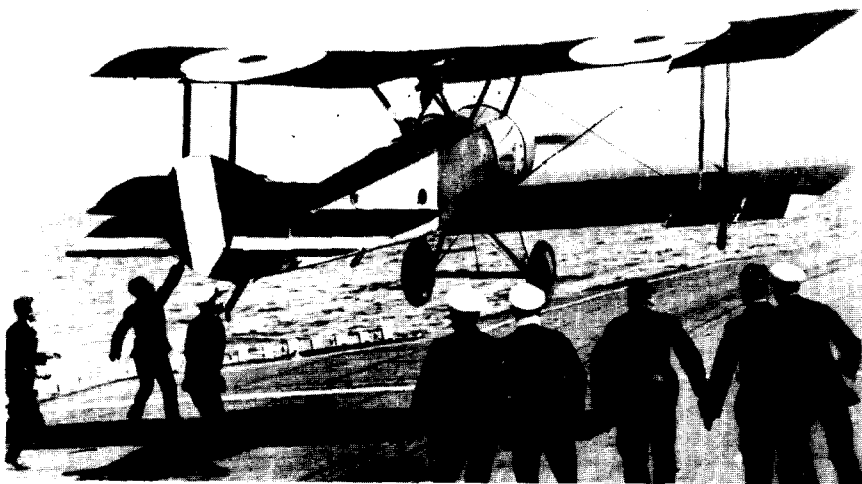
Two other experiments were made in attempts to launch aircraft at sea to provide wider range. In the first, British Navymen designed a floating barge upon which seaplanes were towed. Nearing target, the aft compartments of the lighter were flooded, permitting the plane to slide easily into the water and take off. A variation of this was a larger platform from which small landplanes were launched. They enjoyed a brief popularity and operated in the North Sea early in the war. In the closing months of hostilities, a Sopwith *Camel* was launched in the same area, engaged and downed a zeppelin. The towed lighter was not refined further and saw comparatively little action.

The second experiment made by the British in 1916 tried a new approach toward launching aircraft at sea. On their own initiative, two naval officers made a design that was a departure from the standard envelope-gondola airship. The envelope they used was comparatively small, but they hoped, capable of lifting an F.E.2C airplane. Once aloft and sufficient power given the plane, the envelope was to be detached.

Bizarre? Perhaps. At any rate, a trial launching was made of the contraption on 21 February. The plane lifted off successfully and was gaining altitude when the envelope detached prematurely. One of the officers was spilled from the plane and the other crashed with it.

IN MID-1916, the war's major sea battle was fought, the Battle of Jutland. Earlier in the year, the 20,000-ton Cunarder *Campania* was converted by the British to carry seaplanes and was assigned to Adm. Jellicoe's Grand Fleet.

May approached and nearly ended before the German High Seas Fleet,



FIRST LANDING of a British plane aboard a British ship is made in a Sopwith Pup. Deck handlers help bring the plane to a stop. A few days later, pilot was killed in a second landing attempt.

now under Adm. Reinhard Scheer, made a definite move to encounter the Royal Navy. Jellicoe was ready. Advised in advance that a squadron of German battle-cruisers had been ordered to Norwegian shores for a show of force, he ordered Adm. Sir David Beatty, leading a similar but larger British squadron, to intercept.

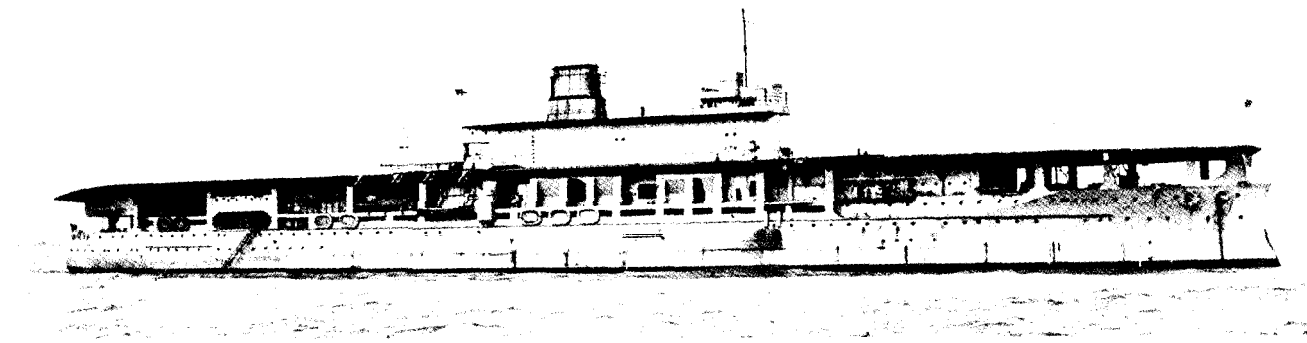
HMS *Engadine*, operating with Beatty's squadron, launched a seaplane

even though outnumbered, the German ships under Adm. Franz von Hipper, sank two of Beatty's vessels. Scheer's High Seas Fleet crested the horizon, and Beatty led his remaining ships on a strategic retreat, north toward Jellicoe.

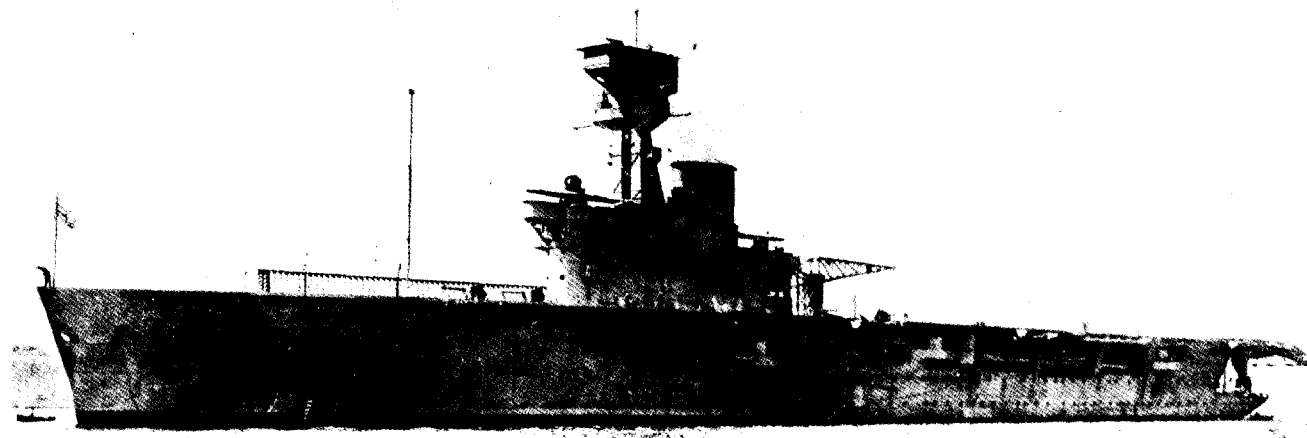
On the day before, *Campania* had conducted a series of successful gun-spotting training flights, returned to her Scapa Flow anchorage about five

Jellicoe assumed his aircraft "carrier," *Campania*, was in company. Thus Jellicoe at Jutland fought without benefit of aerial observation.

Briefly, about 1800 on the 31st, the High Seas Fleet met with the Grand Fleet. Jellicoe made a thrust to cut off Scheer's retreat, but the German admiral ordered his ships first south and then east. By this maneuver, he came up in pursuit along the flank



HMS EAGLE became Britain's second aircraft carrier. Originally planned as a Chilean dreadnought battleship, the ship was converted at end of WW I. Lessons learned from construction and operation of HMS Argus were applied to this ship, and further tests were made.



HMS HERMES, the second vessel with this name involved in the operation of aircraft at sea, is the first aircraft carrier built as such from the keel up. As HMS Eagle learned from tests in HMS Argus, so HMS Hermes profited from tests conducted in the HMS Eagle.

for reconnaissance at 1530 on the 31st. The pilot reported three enemy cruisers and ten destroyers taking a north-westerly course. Fifteen minutes later, the German ships changed course to the south. The pilot tried to flash this signal by searchlight, but his message was not received. One of the ships of the squadron noted the alteration, however, and the ships shifted in time. Thereafter, poor visibility and rough water kept Beatty's plane on deck.

The two squadrons clashed and,

miles from the main fleet, and awaited orders.

At 1735, a signal was flashed to all ships of Jellicoe's fleet to stand by to get under way. At 1900 the order to raise full steam was given and two-and-a-half hours later, *Campania* was ready. At 2254, the "proceed" signal was flashed—but the *Campania* did not receive it. Several hours passed before her C.O. realized that the rest of the fleet had gone.

Until 0200 the following morning,

of the British ships, turned again and launched torpedoes, forcing Jellicoe to retreat.

Scheer then ordered Hipper to engage Jellicoe's attention while the High Seas Fleet maneuvered for an escape route. Scheer found it by 2100, cutting east across the southerly-moving British ships, and dashed to safety.

At battle's end, each fleet had lost several ships, but the British suffered more heavily in tonnage—by almost double. In post-battle retrospect, the

Battle of Jutland could easily have ended in a triumphant victory for the Allies, had Jellicoe had the advantage of *Capania's* plane to report movements of Scheer's ships. The German fleet had no seagoing aircraft. This, combined with lessons already learned in previous sea encounters with the enemy—especially in countering U-boats—strengthened more than ever the British Navy's dedication to the perfecting of the aircraft carrier.

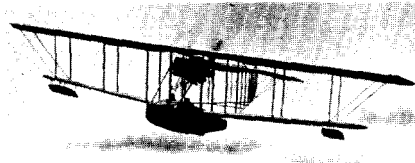
In February 1917, the pacifism of a patient president broke when, on the last day of January, Kaiser Wilhelm notified Woodrow Wilson and the American people that unrestricted submarine warfare would be commenced on the following day. Diplomatic relations were severed on 3 February, but the President decided to wait until the next overt act before asking Congress to declare war.

He did not have long to wait. In February and March, several U.S. ships were sunk and in March, the British Secret Service obtained the famous Zimmerman note, detailing German plans against the U.S. The note was deciphered and passed on to the Americans. Wilson sent his war message to the Senate on 2 April and war was declared four days later.

Advances in British naval aviation were rapid in the closing years of the war. *Furious* joined the fleet, and experiments on landing aircraft aboard were conducted. The first attempt was successful, though unorthodox; no mechanical arresting gear was used.

On 2 August 1917, a Sopwith *Pup* landed aboard. On deck, handlers grasped hold of lines from the plane's wingtips as soon as the motor was cut and the plane was skidding to a stop.

In the next attempt two days later, a tire burst upon touchdown, the plane folded over the side, and the



BATBOAT, developed by Sopwith in 1914, was inadequate. Initial power was 90-hp engine.

pilot was killed. Further studies were conducted and a primitive arresting arrangement was installed, along with netting to protect the ship's bridge.

Other conversions followed promptly. A cruiser of the *Hawkins* class was fitted with a flight deck and commissioned the HMS *Vindictive*. This deck was removed after the war.

In 1917, three ships were planned for conversion to carriers, but work was delayed intentionally on two of them. All three figured prominently in Britain's post-war development.

The first of these was the *Argus*, originally designed as the Italian liner *Conte Rosso*, and is generally considered the first true aircraft carrier. *Argus* had a flight deck 558 feet long by 60 wide and displaced 14,450 tons. She was the first "island" carrier, her superstructure moved to a tight location on the starboard side of the ship.

The second was commissioned HMS *Eagle*, but was originally laid down as the dreadnought battleship *Almirante Cochrane* under a contract with Chile. War interrupted completion of the ship, contracts were renegotiated, and she was converted to an "island" carrier. She was the only aircraft carrier to have two funnels.

HMS *Hermes*, the second carrier to bear that name, was designed from the keel up to operate as a carrier, the first such vessel constructed.

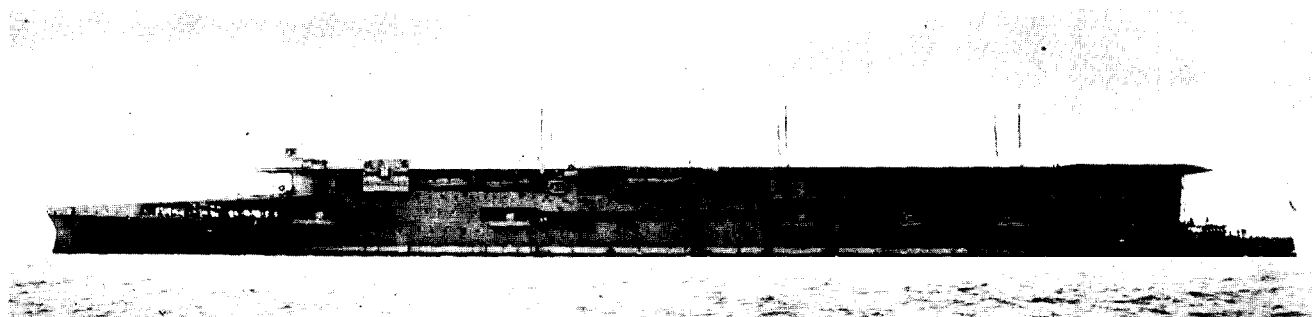
Argus was the first completed, but

saw no action in the war. Convinced now that the progress of seapower lay in the future of aircraft carriers. Great Britain suspended construction on the *Eagle* and *Hermes* until tests were made on the first carrier. The lessons learned were incorporated in the *Eagle*—and this carrier was further tested. Results from experiments on both her predecessors contributed heavily to the eventual construction of the *Hermes*.

The formative, experimental years of carrier warfare drew to a close when, on 11 November 1918, hostilities ceased and the Armistice was signed. Out of the costly, bitter fight for survival a potent new ship-of-the-line developed. Great Britain pioneered in the creation of the modern aircraft carrier.

But at war's end, the U.S. had no vessel specifically built to carry aircraft to sea. Primarily, U.S. Naval Aviation launched patrol flights from shore bases. During the expansion of military forces, the Navy's General Board made concrete recommendations in favor of carrier developments. After the Armistice, it listened to exhaustive testimony concerning the role of aviation in the Navy. Acting on the Board's findings, Congress authorized a small amount of money for conversion of the collier USS *Jupiter*.

When the refitting was completed, the ex-collier was renamed USS *Langley* and commissioned on 20 March 1922 at Norfolk, Va. Surrounded by modern vessels of her day, she appeared to be the strangest-looking ship to join the fleet since the Federal ironclad *Monitor* squatted heavily in the water during the Civil War. Small and gangling as she was, USS *Langley* was the first-born of a large fighting family of powerful Navy ships.



HMS *FURIOUS* was originally a light cruiser, refitted to operate aircraft, and recommissioned in July 1917. Flying deck was 228 feet long, 50 wide. Hangars beneath held seaplanes and landplanes. Later, she was provided a landing deck aft, fitted with arresting gear.