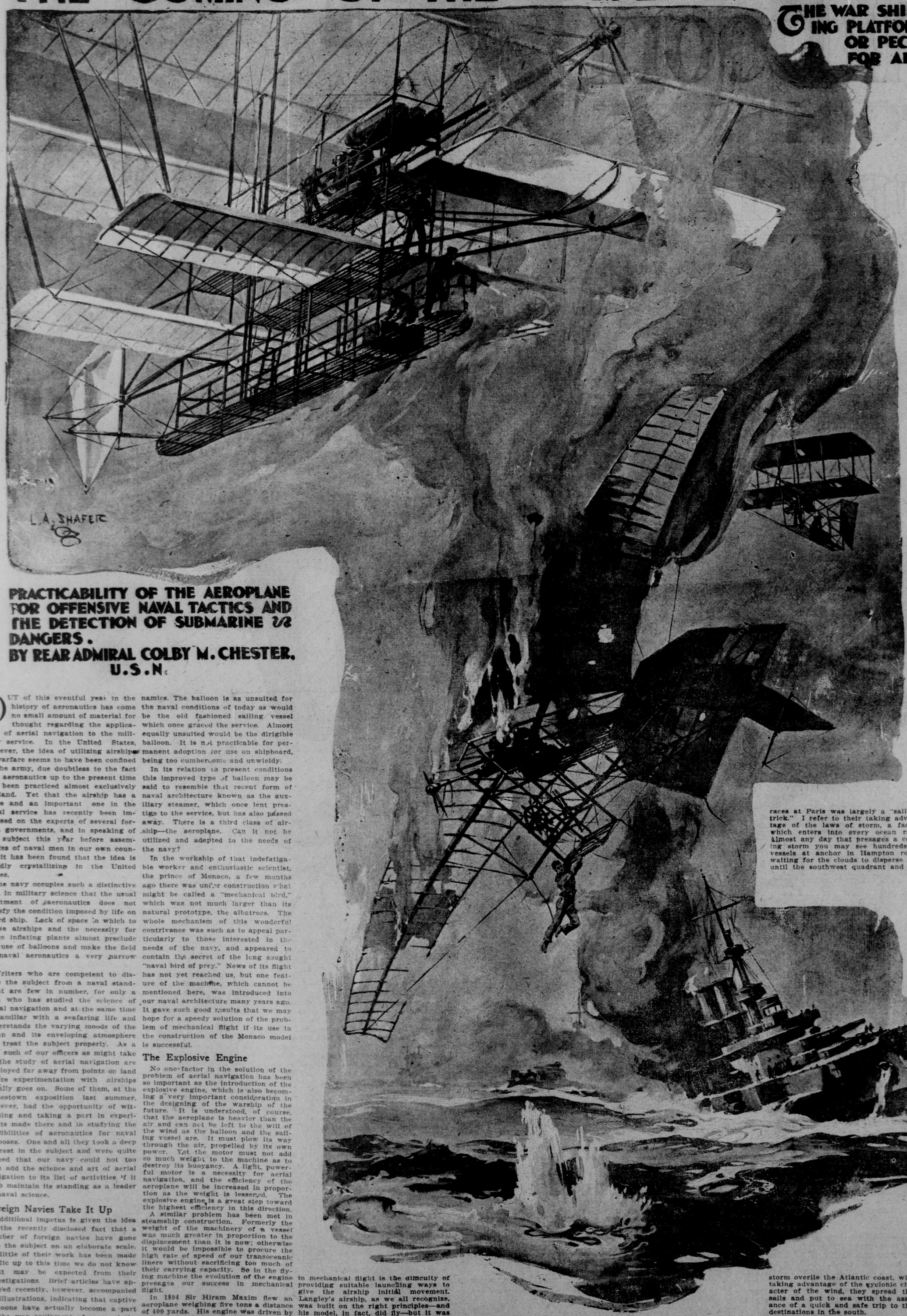
THE COMING OF THE "NAVAL BIRD OF PREY"

THE WAR SHIP AN IDEAL LAUNCHING PLATFORM AND THE SAILOR PECULIARLY FITTED FOR AERONAUTICS



PRACTICABILITY OF THE AEROPLANE FOR OFFENSIVE NAVAL TACTICS AND THE DETECTION OF SUBMARINE DANGERS.

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OUT of this eventful year in the history of aeronautics has come no small amount of material for thought regarding the application of aerial navigation to the military service. In the United States, however, the idea of utilizing airships in warfare seems to have been confined to the army, due doubtless to the fact that aeronautics up to the present time has been practiced almost exclusively on land. Yet that the airship has a place and an important one in the naval service has recently been impressed on the experts of several foreign governments, and in speaking of the subject this year before assemblages of naval men in our own country it has been found that the idea is rapidly crystallizing in the United States.

The navy occupies such a distinctive field in military science that the usual treatment of aeronautics does not satisfy the condition imposed by life on board ship. Lack of space in which to house airships and the necessity for large inflating plants almost preclude the use of balloons and make the field of naval aeronautics a very narrow one.

Writers who are competent to discuss the subject from a naval standpoint are few in number, for only a man who has studied the science of aerial navigation and at the same time is familiar with a seafaring life and understands the varying moods of the ocean and its enveloping atmosphere can treat the subject properly. As a rule such of our officers as might take up the study of aerial navigation are employed far away from points on land where experimentation with airships usually goes on. Some of them, at the Jamestown exposition last summer, however, had the opportunity of witnessing and taking a part in experiments made there and in studying the possibilities of aeronautics for naval purposes. One and all they took a deep interest in the subject and were quite agreed that our navy could not too soon add the science and art of aerial navigation to its list of activities if it is to maintain its standing as a leader in naval science.

Foreign Navies Take It Up

Additional impetus is given the idea by the recently disclosed fact that a number of foreign navies have gone into the subject on an elaborate scale. As little of their work has been made public up to this time we do not know what may be expected from their investigations. Brief articles have appeared recently, however, accompanied by illustrations, indicating that captive balloons have actually become a part of the war equipment of some of the Austrian ships. Furthermore, some of the secret history of the Russo-Japanese war, which is gradually coming to light, shows that in the navy as well as in the army captive balloons have been used to good advantage in scouting.

But experimenting with balloons for the naval service seems almost fruitless, excepting as they may be valuable as schools of instruction in aerodynamics. The balloon is as unsuited for the naval conditions of today as would be the old fashioned sailing vessel which once graced the service. Almost equally unsuited would be the dirigible balloon. It is not practicable for permanent adoption for use on shipboard, being too cumbersome and unwieldy.

In its relation to present conditions this improved type of balloon may be said to resemble that recent form of naval architecture known as the auxiliary steamer, which once lent prestige to the service, but has also passed away. There is a third class of airship—the aeroplane. Can it not be utilized and adapted to the needs of the navy?

In the workship of that indefatigable worker and enthusiastic scientist, the prince of Monaco, a few months ago there was under construction what might be called a "mechanical bird," which was not much larger than its natural prototype, the albatross. The whole mechanism of this wonderful contrivance was such as to appeal particularly to those interested in the needs of the navy, and appeared to contain the secret of the long sought "naval bird of prey." News of its flight has not yet reached us, but one feature of the machine, which cannot be mentioned here, was introduced into our naval architecture many years ago. It gave such good results that we may hope for a speedy solution of the problem of mechanical flight if its use in the construction of the Monaco model is successful.

The Explosive Engine

No one factor in the solution of the problem of aerial navigation has been so important as the introduction of the explosive engine, which is also becoming a very important consideration in the designing of the warship of the future. It is understood, of course, that the aeroplane is heavier than the air and can not be left to the will of the wind as the balloon and the sailing vessel are. It must plow its way through the air, propelled by its own power. Yet the motor must not add so much weight to the machine as to destroy its buoyancy. A light, powerful motor is a necessity for aerial navigation, and the efficiency of the aeroplane will be increased in proportion as the weight is lessened. The explosive engine is a great step toward the highest efficiency in this direction.

A similar problem has been met in steamship construction. Formerly the weight of the machinery of a vessel was much greater in proportion to the displacement than it is now; otherwise it would be impossible to procure the high rate of speed of our transoceanic liners without sacrificing too much of their carrying capacity. So in the flying machine the evolution of the engine presages our success in mechanical flight.

In 1894 Sir Hiram Maxim flew an aeroplane weighing five tons a distance of 400 yards. His engine was driven by steam generated by naphtha and had a weight equivalent to 10 pounds per horsepower. The aeroplane of Santos-Dumont with which he is making successful flights today is motored by explosive engines weighing only two pounds per horsepower. It is asserted that airship machinery weighing but little over one pound per horsepower is possible of construction. So it will be seen in a few years machinery has been reduced to one-tenth its former weight by the development of the hydrocarbon engine.

The greatest obstacle to be overcome in mechanical flight is the difficulty of providing suitable launching ways to give the airship initial movement. Langley's airship, as we all recognize, was built on the right principles—and his model, in fact, did fly—but it was ruined by a defect in the launching ways. At present mechanical flight is possible only when a movement through the air can be obtained of about a minimum of 17 miles an hour, depending upon the area of the lifting surface of the machine. This speed can be had on almost any ship at any time. If her engines will not drive the vessel at that rate it is only necessary to steam—or, better, motor—her head into the wind, when a relative speed through the air will be gained equal to her advance plus the weight of the wind. Thus by a simple movement of the helm a ship can be made the launching platform of an aeroplane.

The obstacles of propelling an aeroplane and launching it having been met by the explosive engine and conditions on shipboard, it is essential that provisions be made for keeping the frail machine in good condition. The machine shop aboard every man of war is already as well equipped as most shops on land and would be a first class aeroplane hospital, while the machinists of the crew and the engineers among the officers would constitute an unsurpassed corps of surgeons.

And now for the man to operate the airship. The mechanical advantages of the naval vessel are well supplemented by the training of its men. Aeronautics might well be a study of the seaman, because it is so closely allied to his special calling and requires development in the air along the lines on which he has conquered the water. The winning of the international trophy in 1906 by Lieutenant Lahm and Major Hersey in the balloon races at Paris was largely a "sailor's trick." I refer to their taking advantage of the laws of storm, a factor which enters into every ocean race. Almost any day that presages a coming storm you may see hundreds of vessels at anchor in Hampton roads waiting for the clouds to disperse and until the southwest quadrant and the storm overlie the Atlantic coast, when, taking advantage of the cyclonic character of the wind, they spread their sails and put to sea with the assurance of a quick and safe trip to their destinations in the south.

This is practically what was done by Lahm and Hersey when they put their airship in the quadrant of southerly winds, low down in the atmospheric sea, instead of seeking the higher altitudes taken by their competitors. By doing this they were carried from Paris to England and reached the "farthest north," winning the cup by a margin of 37 miles. This was old time navigation, and the result showed that it fitted the conditions exactly.

Reference has been made to the kind of airship best adapted to the navy, of the conditions aboard ship that make the use of the aeroplane practicable and of the peculiar fitness of seamen for aeronautics, leaving for last what is really the first consideration—the adaptability of the aeroplane for what we may call "offensive warfare," "the detection of submarine dangers" and "scouting."

It is interesting to speculate upon the possibilities of naval warfare conducted with the aid of an ideally successful airship as a weapon of attack. An aeroplane that could rise to the height of 200 or 300 feet would be out of range of the guns of an enemy's fleet, as large guns on shipboard cannot be trained toward the sky at any great angle without the recoil from the discharge doing incalculable damage to the vessel, and the lighter guns have not sufficient range to reach such an object. Such an airship, then, could drop explosives into the fleet of an enemy and do great harm without so much as exposing itself to danger.

The value of the airship in detecting submarine danger is not a matter of speculation. In fact, it would seem to afford a very real protection against submarine vessels and both stationary and floating mines. It is a well known fact that, to a limited altitude, the higher an observer is lifted above the surface the more clearly and to the greater depth can he see into the water. The seaman from time immemorial has used the masthead of the ship as a lookout station from which to pilot the vessel through intricate coral channels, and it has been the pleasure of the sailor in the vicinity of the Bermudas and the famous sea gardens of Nassau to view from that height the wonders of the deep.

An instance of the facility with which submerged objects can be seen from the height attained by an airship was given by Captain T. T. Lovelace, who at the time of the earthquake at Jamaica took an airship to that vicinity for the purpose of studying the effects of the earthquake upon the bottom of the sea. He found that the whole bed of the ocean for a considerable distance from the island was perfectly visible to him and in deep water comparatively small objects were plainly seen. It is believed that had such an appliance as an airship been available at the time of the sinking in San Francisco bay of the steamship Rio Janeiro the long and vain search for that lost ship would not have been necessary.

Uses of the Aeroplane

Neither the naval man nor his lay brother needs to be impressed with the advantage to a commander in time of war given by a knowledge of the whereabouts and movements of the enemy. This is not less true upon the water than upon the land. The war balloon of the army has come in response to the recognized demand for thorough scouting. In the navy the aeroplane would fill the needs. Lord Nelson when chasing the vessels of his arch enemy, Napoleon, in the early part of the last century, said that of all things he missed most were scouting vessels, which he properly called the "eyes of the fleet." It is only necessary to read of his campaign to appreciate the truth of this expression and to see of what inestimable value a small, compact aeroplane would have been to him. Undoubtedly had use been made of such an appliance the history of Napoleon's campaign in Egypt would never have been written.

Several of the ships of the Vladivostok squadron which wrought such havoc among Japanese transports and merchantmen during the late war between Japan and Russia had installed on their decks captive balloons, with which the ships were able to make more than one examination of the coast of Nippon without themselves being seen. Much of interest of this phase of war has been learned this last summer from one of the Russian officers who took part in it, who gave our officers much valuable information as to the uses of the captive balloon.

It appears that the Russian vessels kept about 30 miles off the coast of Japan, and from there they made many extremely successful scouting expeditions. Such of the Japanese ships of the smaller kind which may have been near enough to have seen the balloon in its flight took no alarm from the innocent looking black dot against the sky, since no Russian warship appeared upon the horizon to threaten their safety.

By long living with and fighting the winds the seamen know their habits and how to turn them to their own advantage. Who better equipped then to overcome them in a new field of endeavor? In addition to their equipment as seamen there is the desire upon the part of many of the navy officers to study aerial navigation.

There is no class of men in the country better qualified by education, mechanical ability and experience allied to the subject than are the officers graduated from the naval academy, and the great impetus that has been given to the aeronautic science by the international balloon race which recently took place from St. Louis has brought the matter to the attention of naval authorities with greater force than ever before, and it is sincerely to be hoped that they will see that the subject is of such importance as to warrant the establishment of an aeronautic corps. This has been done in all of the principal armies of the world, as well as in the Austrian, Russian and perhaps other navies of Europe. When such a corps as this is established and serious and sedulous study is given to the subject there is little reason to doubt that we will not live much longer before a fleet of mechanical birds is provided as an adjunct to the battleship fleet which must form the first line of our defense against an enemy.