

Reproduction of Prints, Drawings, and Paintings of Interest in the History of Science and Engineering

9. Three Prophetic Aeronautical Prints

By E. C. WATSON

ATENTION has been called recently to a number of interesting predictions concerning the invention, use and misuse of aircraft.¹ Such predictions are really not particularly surprising if written in the nineteenth century because, as a result of the lighter-than-air developments which took place during the last two decades of the eighteenth century, almost all of the uses—and misuses—to which airplanes have been put during the twentieth century were seriously suggested and even tried with balloons, and many of these suggestions and trials not only were recorded but were given widespread publicity by the numerous prints and caricatures which appeared during that period.

The prints reproduced in this article are three examples from many that might have been chosen to illustrate the military uses of aircraft which were suggested about 1800. Except for the fact that balloons are depicted instead of airplanes, they might almost represent battle scenes of the war just ended.

The first suggestion of the possible military use of aircraft was made in 1670 by the Jesuit, FRANCESCO LANA (1631-1687), in connection with his proposal of the first lighter-than-air machine based upon a

sound scientific principle.²

LANA did not attempt to construct the proposed aerial ship for the following reason:

God would not suffer such an invention to take effect, by reason of the disturbance it would cause to the civil government of men. For who sees that no City can be secure against attack, since our Ship may at any time be placed directly over it, and descending down may discharge Souldiers; that the same it would happen to private Houses, and Ships on the Sea: for our Ship descending out of the air to the Sails of Sea-Ships . . . it may over-set them, kill their men, burn their Ships by artificial Fire-works and Fire-balls. And this they may do not only to ships but to great Buildings, Castles, Cities, with such security that they which cast these things down from a height out of Gun-shot, cannot on the other side be offended by those from below.³

This is a truly remarkable prediction and one that was completely realized during World War II. That

²F. Lana, *Prodromo overo Saggio di alcune Inventioni Nuove premesso all'Arte Maestra* (Brescia, 1670).

³Translation by Robert Hooke, *Philosophical collections* (London, 1679), No. 1, p. 18.

¹See, for example, M. F. Ashley Montagu's note in *Science* 98, 431 (1943).

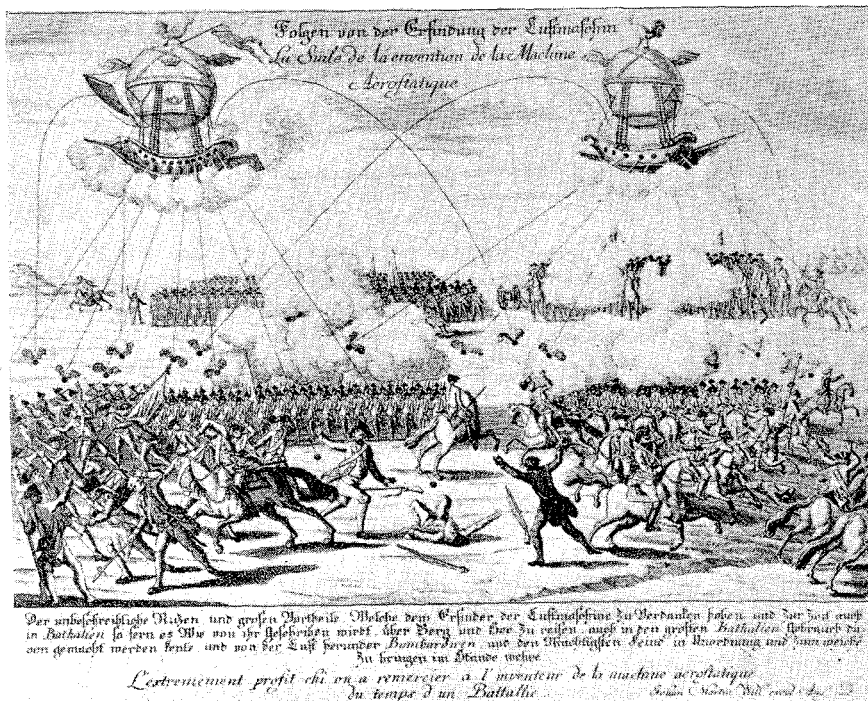
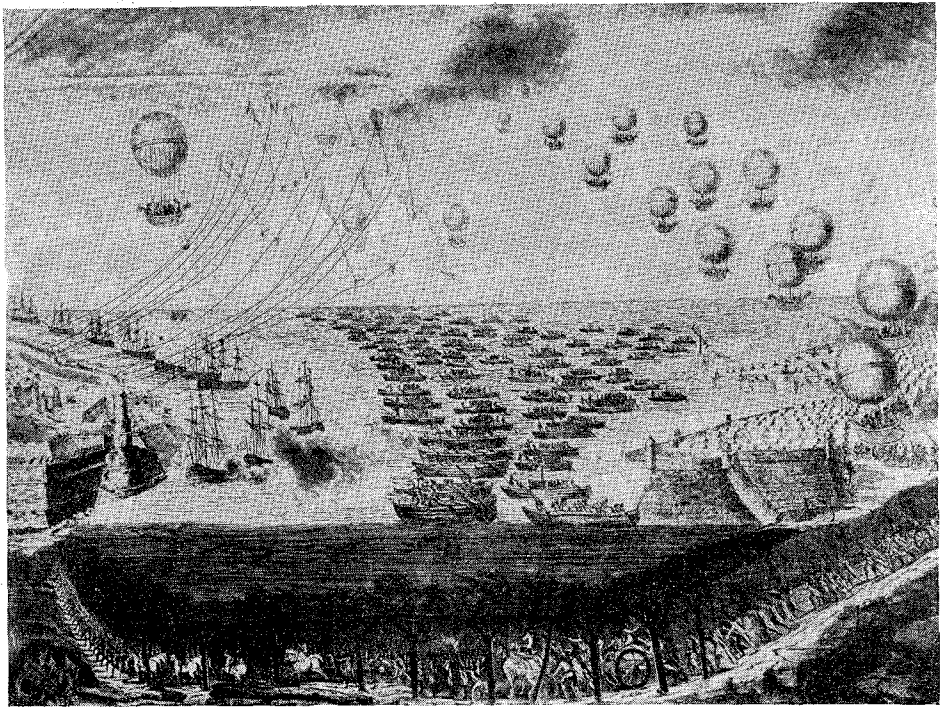
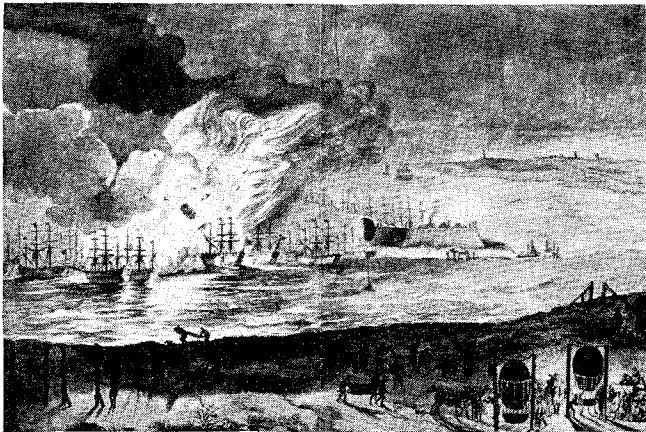


Plate 1. A German caricature showing two military balloons strafing troop concentrations. (Circa 1804)

Plate 2. A Napoleonic project for attacking England.
(Circa 1803)



the possibilities envisioned by LANA and achieved by modern war planes were also considered very seriously nearly 150 years ago is clear from the three prints here reproduced.



The bombing and strafing of troop concentrations by airplanes has now become standard practice. Plate 1 is a reproduction of a German caricature of about 1804 showing two armies, one of which is put to flight by the artillery of two aircraft.

During the Napoleonic Wars several schemes for attacking England from the air were proposed. Plate 2 shows the French forces attacking in balloons, in barges and through a channel tunnel. Actually from May 1803 until August 1805, NAPOLEON had an army of approximately 130,000 men encamped at Boulogne while more than 2000 flat-bottomed boats and barges, designed to land men and equipment on the beaches at Dover, were constructed and assembled. The project was abandoned only shortly before the Battle of Trafalgar.

Plate 3 is an early (circa 1803) suggestion of a bombing attack from the air on the British Fleet.

Plate 3. (left) A Napoleonic project for destroying the British fleet. (Circa 1803)

Modern United States Submarines

(Continued from page 7)

But the finest part of submarining during the war was the two-weeks rest periods after each run. For two weeks a man lived ashore in a hotel while the repair crews took over the boat. He got caught up on the sleep, fresh milk, oranges, eggs, and horse-back riding that he had missed at sea. Or if he spent a refit in Australia, he could lose sleep and have a fine enough time to require two months of sea duty for recuperation. The important thing was the complete change in living routine, environment, and the lifting of all responsibility.

Fifty-two United States submarines were lost during the war—less than the number lost by any Axis nation or by Great Britain. The Germans lost 700.

The Japanese lost over 100 out of an original 140. The damage to the enemy by the submarine force of this country in proportion to losses was tremendous, any way one looks at it. In terms of tonnage, the Japanese paid 100,000 of theirs for every 1500 of ours. In terms of lives lost, every American accounted for about 70 Japanese. At war's end there were 240 submarines in the United States Navy. There can be no doubt of the effectiveness of this weapon, considering the small size of the submarine force in terms of what it did.

The future of the submarine looks even brighter. Faster submerged speeds, faster, smaller and longer range torpedoes, and its innate ability to hide from radar may well leave the submarine the only truly naval weapon of the future. In any event, the modern American submarine has proved itself a fine foundation on which to build a future submarine navy.