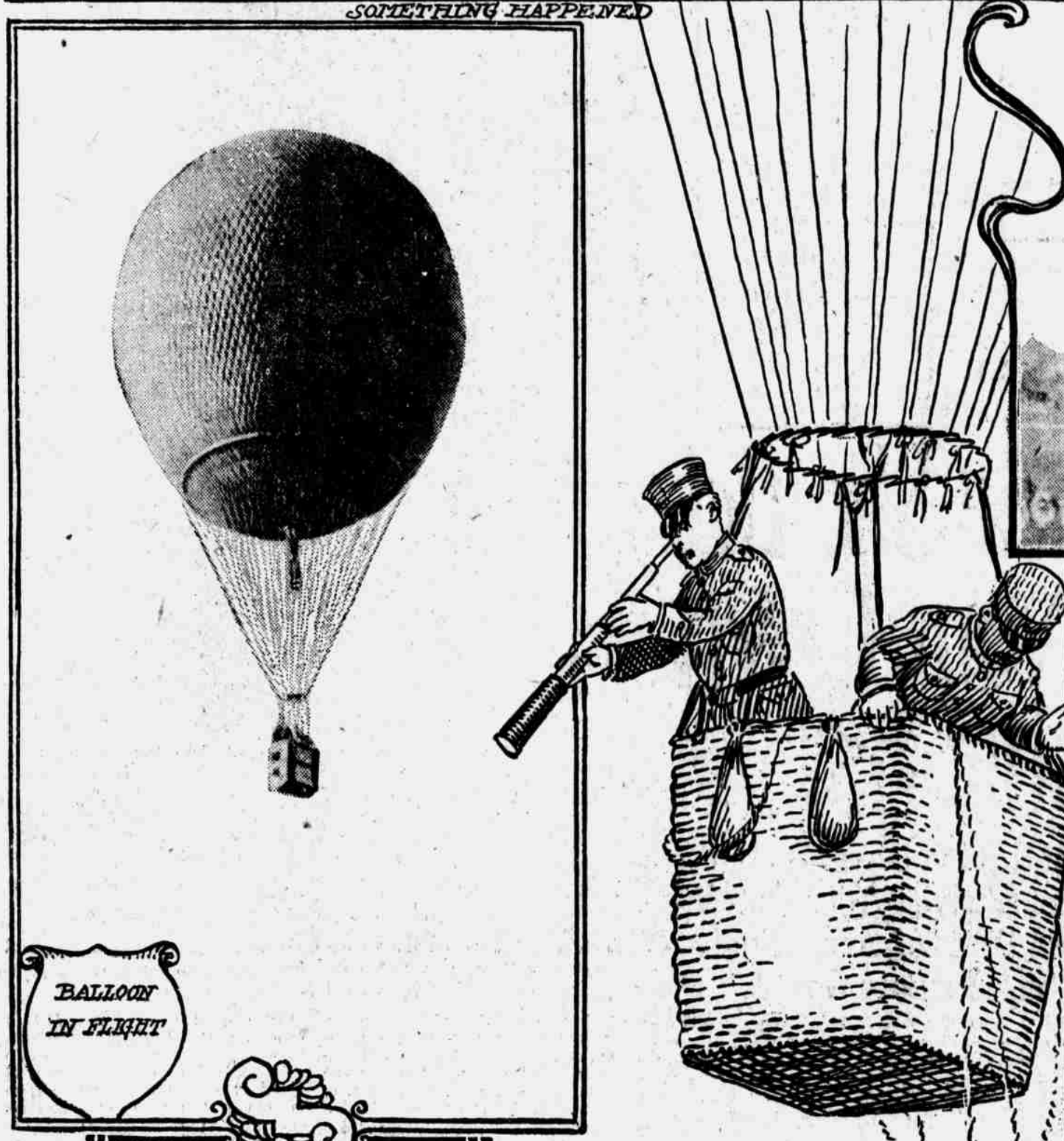


## Science of Military Ballooning Taught at Fort Omaha

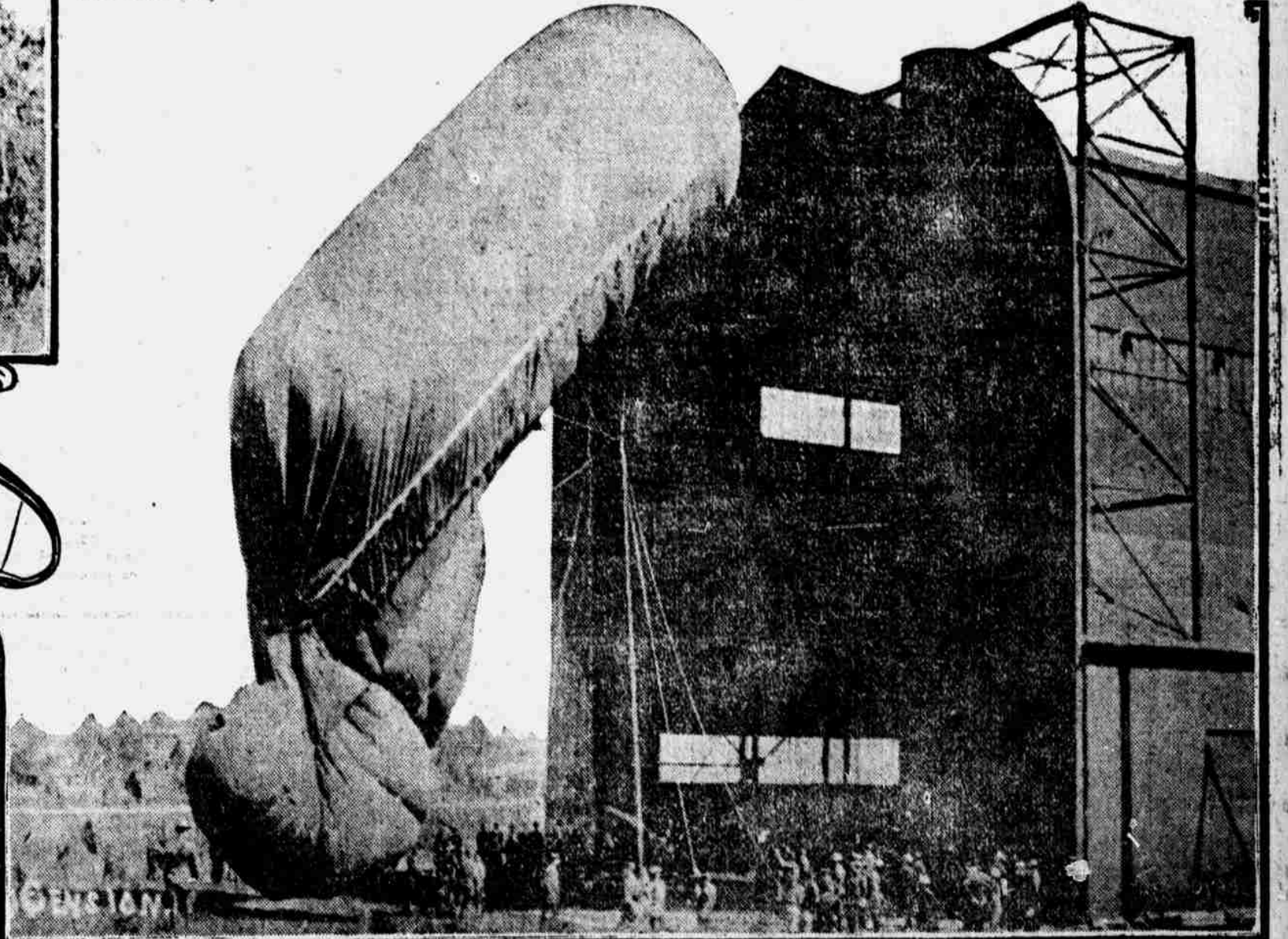


INFLATING  
A BALLOON

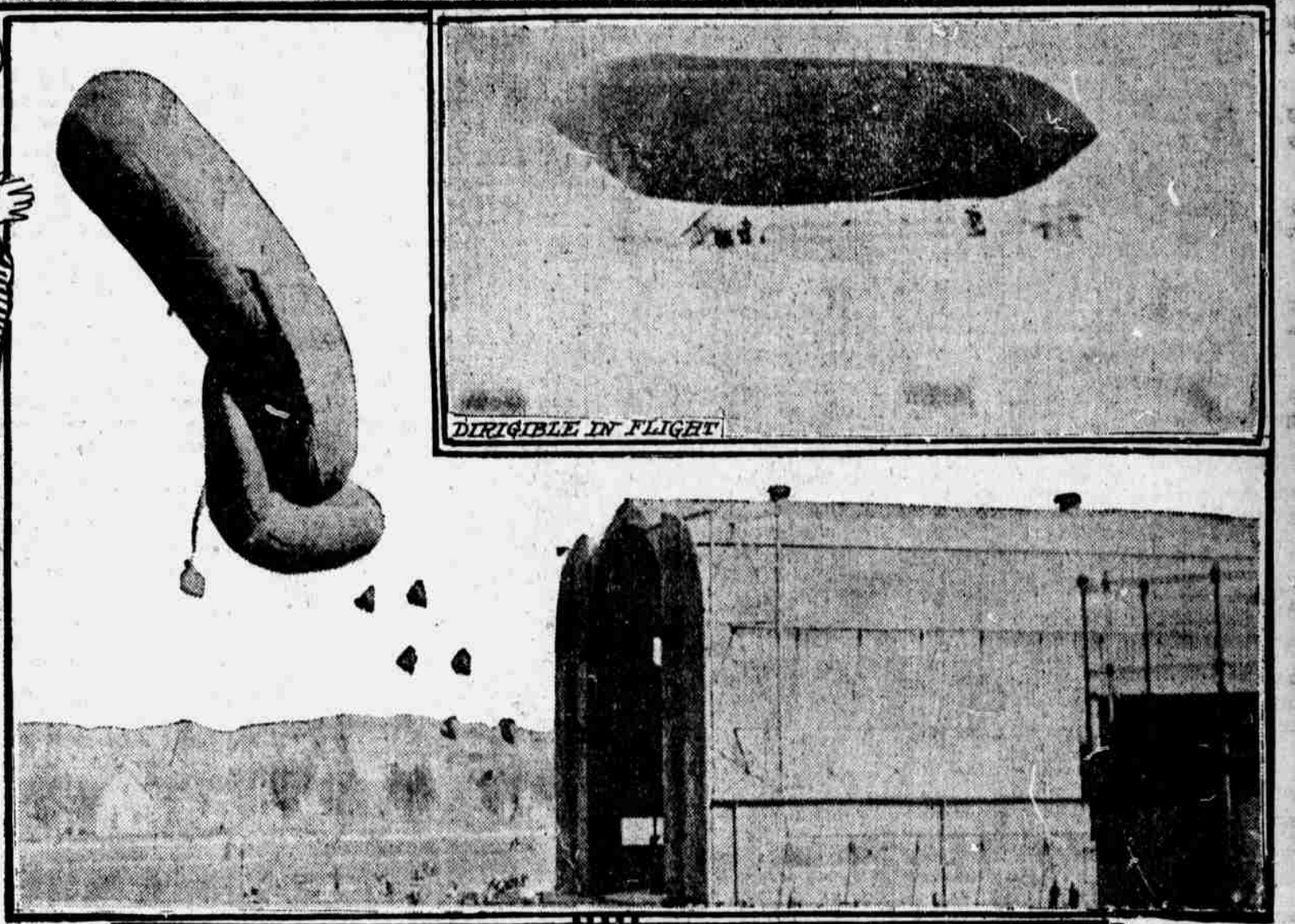


SOMETHING HAPPENED

BALLOON  
IN FLIGHT



DIRIGIBLE IN FLIGHT



LEAVING THE BALLOON HOUSE

**F**ORT OMAHA has been the scene of much maneuvering with balloons of military size and qualifications during the last week. No swooping air ships, nor darting planes, nor even the ponderous contraptions that are supposed to be devoted to the transportation of passengers, have been on parade out there. Uncle Sam's ballooning is carried on in a practical manner. The general government has no use for the affairs that are more spectacular than useful; when it adopts something for the use of the army, it is because the innovation has demonstrated its utility and its desirability as well. So, while much of experiment has been carried on with aeroplanes and other flying devices, the training in the uses and advantages of balloons as adaptable to warfare is with the balloons of the kind that may be depended upon. So the maneuvers of the last week were with big gas bags, inflated with hydrogen gas, made at the fort, the same sort of gas as will be carried in steel containers when the signal corps goes to the front with its telephony, its wireless telegraphy and its captive balloons. A huge dirigible is among the equipment of the balloon house at Fort Omaha, and it was also handled, but on the basis of the spherical free floating balloon.

Fort Omaha is the center of aeronautical instruction for the western division of the army. It is here the officers and men of the signal corps come for their practical training in the handling and maneuvering of the big gas bags, and the work that has been going on out there is but a part of the regular course of instruction. It was hampered in the early part of the week by the stormy conditions that prevailed, but a number of ascensions were made, and many experiments with instruments were undertaken, all with some success.

Ballooning for army purposes has finally come down to a ground-work basis and the assigned task called upon the balloons when war is declared will be for three purposes. These are:

The observation of the enemy's camp.  
Scouting purposes on the position of reinforcements and the enemy's strength.  
Transportation of supplies and men to inaccessible places.

This last purpose necessarily would be seldom if ever called into use. But for observation and scouting the balloon is the most valuable addition to the strength of a fighting army. For these purposes wig-wag signals transmitting the government's secret code are used. Even the use of wireless telephony and telegraphy has been tested out to further facilitate the distance the aeronaut can go when wig-wag signals would be impracticable. Some sort of signaling is known to be absolutely necessary as some mishap might happen to the balloon and its passengers as it crosses the enemy's lines. On most occasions the men who compose the balloon corps are called upon in actual warfare to be martyrs to their profession and for their coun-

try. Especially so if the balloon used is of the spherical type with no means of guiding except by air currents. The free balloon will finally rest, eight times out of ten, on soil beyond the position occupied by the foe. Ballooning is fraught with peril even for experimental purpose, not alone when it is actually the center of a standing army's attack. For experimental purposes the captive balloon is more generally used.

Major Samuel Reber of New York, an instructor of the army signal corps and commanding officer of this branch of the eastern division, has been in charge of the flights and superintending the courses of instruction. Major Reber is vice president of the Aero Club of America, and has charge of that department of the club that arranges for flights. He is an authority on all forms of aircraft in present and prospective use. He will be stationed at the post during the entire time the course extends.

Besides Major Reber and the balloon corps of Fort Omaha and its officers, fifteen commissioned officers of the signal corps at Fort Leavenworth are ordered here and will be present during the flights. The visiting officers are: Major Samuel Reber, eastern division, in charge; Captain George E. Mitchell, signal corps, acting director of the army signal school, instructor; First Lieutenant J. O. MarBorgne, Third infantry, instructor; Captain George S. Gibbs, signal corps; Captain Holland Rubottom, signal corps; Captain Parker Hitt, signal corps, and Captain Alvin C. Voris, signal corps, students; First Lieutenant Frank S. Bower, Twentieth infantry; James G. Taylor, Eighteenth infantry; Frank L. McEntee, Jr., signal corps; David L. Roscoe, First cavalry; Bert W. Phillips, Twenty-seventh infantry; Howard R. Smalley, Eighth cavalry; Charles A. Dravo, Twenty-first infantry; Karl Truesdell, signal corps; Second Lieutenant Edmund R. Andrews, Seventeenth infantry, all students.

At least one captive and one of the free spherical balloons at the post were used for instruction purposes. The post has a total of four balloons, including the dirigible, which are considered to be sufficient for use.

Beside the flights a school will be established for the study of signaling from air craft. The use of wireless telephony and telegraphy and the care and preparation of a hydrogen gas station will be studied in regular set courses. Lectures along these lines will be given by the instructor in charge.

Military ballooning or aeronautics is not by any means a new proposition, as has been generally accepted. Neither has there been very rapid advancement in the methods of military ballooning over that of a century ago. When the balloon was first used in the French revolution in the latter part of the eighteenth century, of late years the aeroplane has been used considerably by foreign governments as aeronautical scouts, with special success by the Italians in the recent Italo-Turk war in Tripoli.

At the Fort Meyers aeronautical experiments

last year and the year before the Wright brothers demonstrated several of their aeroplanes and the government has purchased a number of these. Despite this fact balloons have been more successful in this country from a military standpoint than the monoplane or biplane.

The first use of balloons for military purposes was in 1794 by the French government during the revolution of that year. An aeronautical school was founded at Meudon by Guyton de Morveau, a noted chemist, and Colonel Coutelle of the military establishment, in charge. Both men were enthusiastic balloonists. Four balloons were constructed for the armies north of the Sambre and Meuse and south of the Rhone and Moselle and of Egypt. Ascents were made that year by Coutelle, as adjutant general of the French army to reconnoiter the battle of Fleurus. Other successful ascents were made in that campaign. In 1830 during the troubles in Africa successful ascents were made. About this time the efficient balloon corps of the French army was formed. Today it is one of the ablest departments of any existing army in Europe. During the campaign against Venice in 1849 this corps did commendable work.

Both Russians and French used balloons during the Crimean war for reconnoitering purposes, though not used by any of the other allied armies. The French again had recourse to the balloons during the Italian campaign in 1859. A number of brilliant reconnoissances were made before the battle of Solferino.

Hydrogen gas was used to inflate the balloons at the battle of Fleurus, while fifty years later a fire balloon was employed. Eugene Godard, in charge of the balloon experiments before Solferino, favored the fire balloons, as they were not so easily destroyed or forced to descend if pierced by bullets. The Austrian balloonists attested to M. Godard's opinion later.

Ballooning was slow to be taken up by the British army. It was only after the United States troops had successfully demonstrated the practicability and efficiency of the balloons that a balloon corps was added to Tommy Atkins' army. Although the British War department was slow in installing the balloon corps, Lord Kitchener, the hero of Khartoum, had a small balloon corps with him during his famous Soudan campaign. Balloons played a small part in the Boer war in South Africa in 1900. On account of the scattered position of the forces and the heights that they were

forced to ascend, however, the balloons proved of very little military use.

Perhaps the most extensive use of military balloons was during the siege of Paris. Sixty-four were sent up from the French capital, the first on September 23, 1870, and the last January 28, 1871. Gambetti made his escape from Paris on October 7, 1870, and it was his escape that prolonged the German-Franco war. Two of the sixty-four balloons were never heard of again. They were probably blown out to sea, several were taken prisoners by the Germans, who used them for reconnoitering purposes. The average size of the Paris balloons were of 70,000 and 72,000 cubic feet capacity. The aeronauts were generally sailors, and they did their work well. There was but little use of the balloons during the siege for reconnoitering purposes, their usage being in carrying messages and effecting the escape of leading beleaguered citizens.

Major General George B. McClellan used balloons for the first time in American during his Peninsular campaign in 1862. His balloon staff consisted of a captain, two lieutenants and fifty enlisted men. Two gas generators, drawn by four horses each; an acid cart, drawn by two horses, and two balloons, drawn by four horses each, comprised the apparatus of the staff. These balloons were always kept partly inflated and were of about 13,000 and 26,000 cubic feet capacity. Their inflation usually required about three hours. They were captive balloons and were used for reconnoitering purposes only. It has always been a mooted question as to their availability for the purposes intended. The balloons were practically of no service to General McClellan, for during the entire campaign the weather was wet, foggy and rainy, and the settling of the heavy artillery and cannon smoke left an almost incessant fog over the ground.

Much of the impetus given towards successful improvements of the military balloon got its inception from the American experiments. These experiments have been continuous. The last five years has shown the greatest development. The reason for this is the general acceptance by all governments that the warfare of the future will not only be upon the soil, or upon the seas, but also in the air. Therefore every leading government is expending millions and training thousands of soldier aeronauts. There has been a great divergence of opinion regarding the type of bal-

loon that offers the greater value, whether the inflated balloon idea with its pear or globular shape, or the dirigible inflated cigar-shaped bag or aeroplane idea.

The average capacity of the balloons used at Fort Omaha is about 12,000 to 16,000 cubic feet. The smaller amount will be sufficient for experimental purposes, and the greater supply when thought necessary. The balloons will have a lifting capacity of two or three men and a requisite amount of ballast.

The objection to the independent balloon for war purposes is its unreliability in an emergency, and its being absolutely at the mercy and whims of air currents. Once leaving the earth the balloon is practically the master of its own movements, unless it be of the dirigible class, and even the dirigibles are uncertain in their whims if ascending to any great height. The captive balloon can be controlled from a given point. The free balloon cannot be controlled at all.

The project of dropping missiles from balloons into an enemy's camp, even if permitted under the rules of civilized warfare, is in a measure wholly impracticable. The releasing of that much weight from the balloon would have the same effect of releasing ballast, and the balloon would keep ascending with the decreasing weight. It has been suggested that balloons might be sent up that carried only missiles or explosives to drop into an enemy's camp, and that they be dropped automatically, or in the case of captive balloons, they might be dropped by electrical contrivances from the ground or point from which the balloon was sent up. The impracticability of such a proposition is shown again in the uncertainty of controlling the balloon, though it be a captive balloon, in the air currents, and the uncertainty of locating the balloon directly over the dropping point desired. With military authorities the matter of using captive balloons for dropping missiles or explosives into camps has never been seriously thought of, though Italians are reported to have done so successfully.

To date the only use for balloons in warfare are for observation, signaling aid and photography, and to this end the balloon school at Fort Omaha was organized. Approximately \$500,000 has already been expended in the equipment of the Fort Omaha balloon house and hydrogen gas plant. Each year an allowance is made from the regular appropriation by congress to the army for the maintenance of the station.