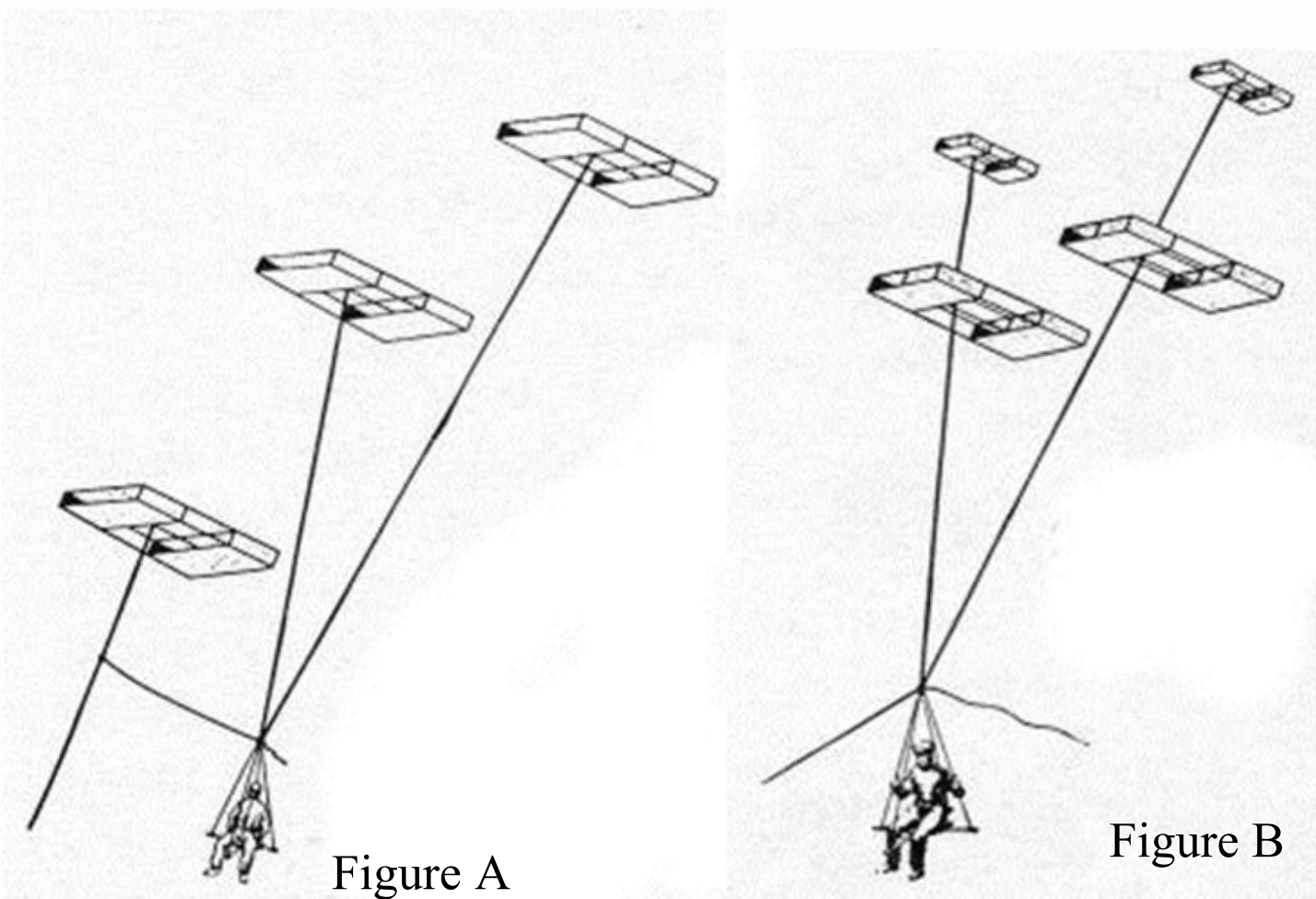


First Man-Lifting by Kite in the United States

Governors Island Jan 22, 1897



Sketches of Lieut. Wise's modified Hargrave box kites used in his 1896-7 man-lifting trials.

Figure A shows "Jimmy" hanging from the original configuration that was scrapped after dropping the dummy into the bay.

Figure B shows Lieut. Wise sitting in a boatswain's chair below the configuration he eventually adopted.

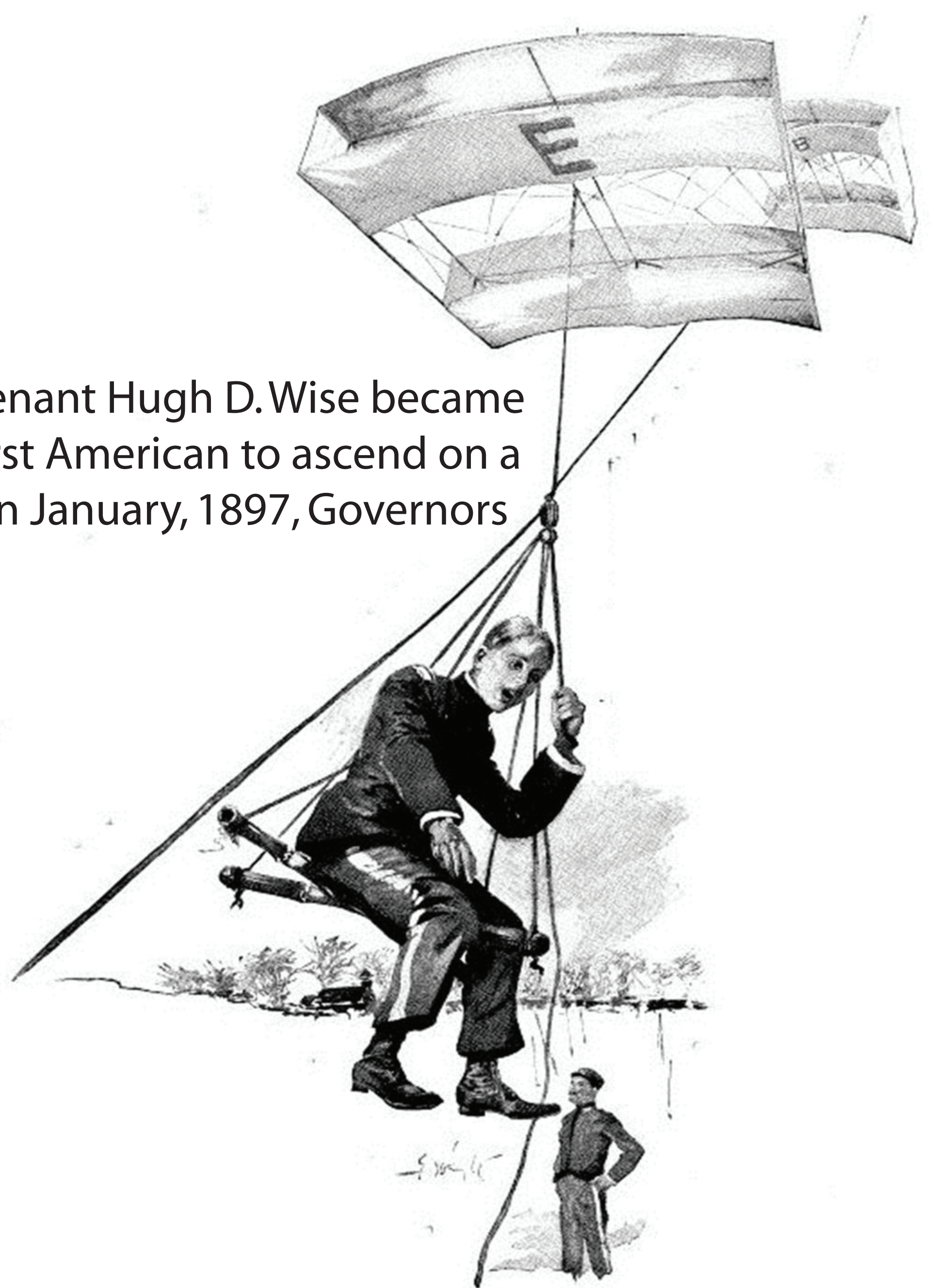
Lieut. Wise's man-lifting experiments of 1896-7 were in a period when most Americans saw kites as a child's toy or, at best, an Asian curiosity. He joined a growing cadre of aeronautical pioneers, mainly amateurs from around the world whose motivation drove them into pushing the envelope of aeronautical knowledge. Lawrence Hargrave advanced the movement by making copious notes on his flight experiments available to the rest of the world. Others noteworthy researchers included William Eddy, a photog-

rapher from New Jersey, Octave Chanute a railroad engineer from Chicago, Dr. Samuel Langley, Secretary of the Smithsonian Institute, Washington, DC, and Professor C. F. Marvin of the Weather Bureau at Washington, DC.

As with any appropriate research project Lieut. Wise read everything he could on the subject of load-lifting kites before setting out to accomplish his goal. The U.S. Weather Bureau Review was of special interest because it was a relevant guide based on kite trails conducted by Professor C. F. Marvin in the summer of 1896. The bureau was looking for the most efficient kites to raise instrument payloads to great heights. The kites had to be able to flown in all types of

weather and withstand sudden changes in wind velocity. The study was very comprehensive and not only included the lifting efficiencies of different kites (mainly Eddy diamond and modified Hargrave box kites) but other aspect such as how the kite line, windlass, spar thickness and flexibility affected a kite's flight.

Lieutenant Hugh D. Wise became the first American to ascend on a kite on January, 1897, Governors Island



Lieut. Wise and ground crew launching a Hargrave box kite on Governors Island.
Courtesy of Defense Visual Information Center

LIEUTENANT HUGH D. WISE - THE MAN WHO WENT ALOFT ON A KITE STRING

Today, if the banner headline in the New York Times read, "ALOFT ON A KITE STRING" readers would more than likely not give the attached article a second glance. Nevertheless, on January 22, 1897 such an eye-catcher proved to be of great interest to many New Yorkers. A man being lifted aloft on a kite proved to be of such interest magazines such as Nature (February, 1897, No 1423, vol. 55, page 327), The Century Illustrated Monthly Magazine (May 1897 to October 1897, vol. XXXII) and Scientific American (November 7, 1896, page 344) all covered the phenomena.

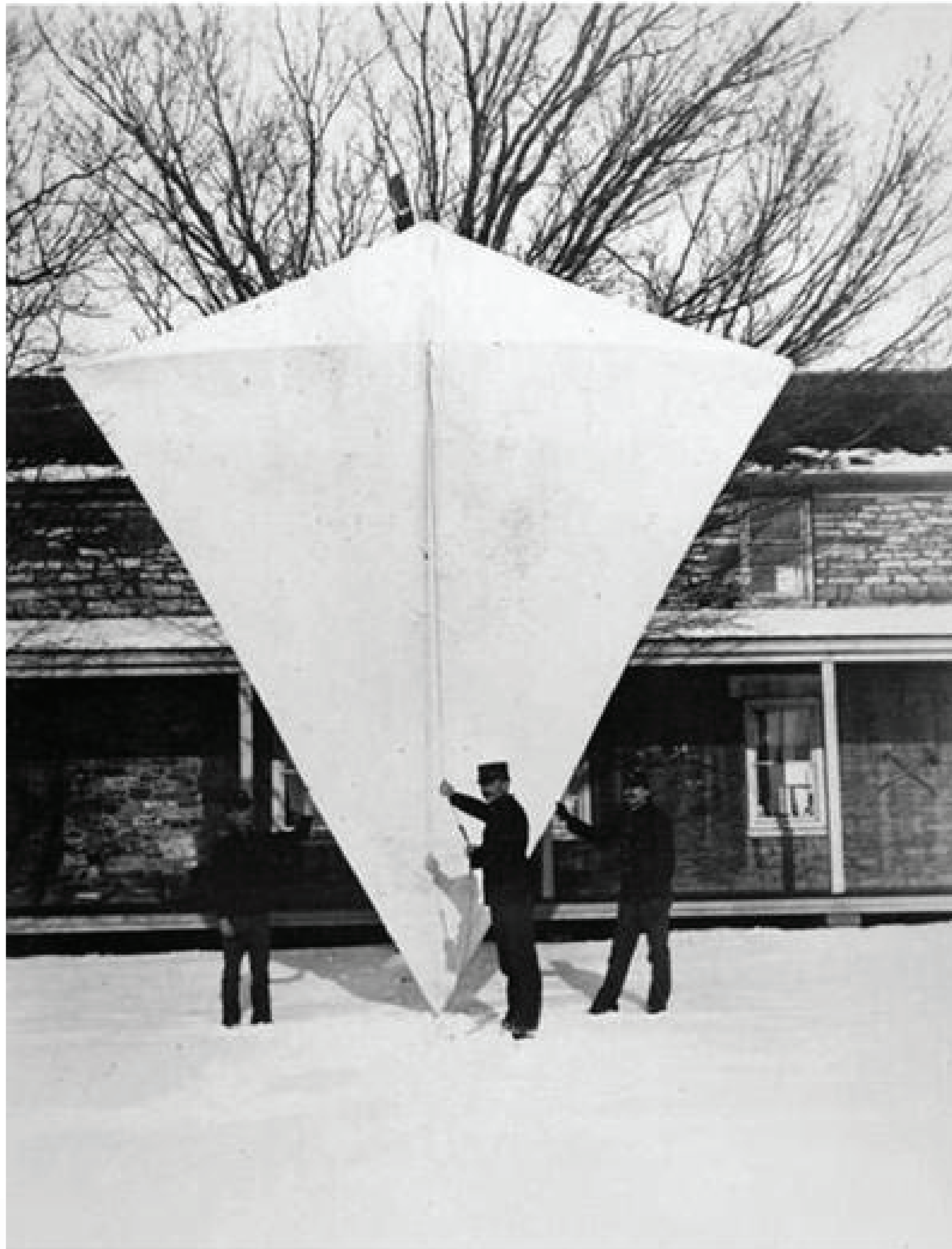
The subject of the intense interest was a Lieut. Hugh D. Wise, who was stationed with the Ninth Infantry on Governors Island, New York, and his man-lifting experiments. Starting in September, 1896, Lieut. Wise had attracted the attention of persons along the Battery, ferryboat passengers and boatmen for over a six months period while he went about testing various prototype kites and systems. The experimental kites were modern and tailless; shapes observed by the naked eye at the long distance that would have been foreign to the uninitiated to the world of modern kites.

The lieutenant added further intrigue by remaining mainly mum on the subject of his experiments even while they were very visible to so many. He finally admitted to conducting the research on his own responsibilities because he believed kites could play an important part in times of war, either for field photography, lifting observers or as signaling platforms.

This was not the first kite experiments conducted on Governors Island by Lieut. Wise. In 1895 he had made a series of tests using kites as platforms for reconnaissance photography. For example, he built an 18-foot high Wise-Eddy kite and attached a box camera to the string. Triggered by a timing device, the camera took photos from an altitude of up to 600 feet.

The Times article proclaimed Lieut. Wise was the first American to make such an ascent by means of a kite. He was also one of only three people in the world to have obtained the feat, including Capt. H. Baden-Powell of the Scots Grays who, armed with a parachute, reached a height of 100 feet and Lawrence Hargrave, from New South Wales, who went to forty feet.

By using a tandem train of four modified Hargrave's box kites Lieut. Wise proved his concept by successfully lifting himself to a height of 40 feet before descended five minutes later. Because of safety reasons he had made preliminary tests by hoisting a 150 pound dummy, named "Jimmy", in a boatswain's chair. The lines were rigged with a pulley, to aid in raising and lowering the chair, attached at the point at which the two upper kites joined the main line. When the kite trains reached a sufficient height the dummy was hoisted up in the chair. The lieutenant chose the two separate train system, each made up of a pilot kite attached to a much larger lifter kite, after a squall had dunked a single train version (and Jimmy) into the harbor. Witnesses on Manhattan and its surrounding waters must have been a gasp at seeing the "body" dangling below the kite as the whole structure lurched forward and plunged to a watery demise.



Lieut. Wise and crew with his 18-foot Wise-Eddy kite - Courtesy of Defense Visual Information Center



A sketch of one of several incidences faced by Lieut. Wise demonstrating the dangers faced by aeronautical pioneers. As he stepped into the boatswain's chair the lead (pilot) kite collapsed in a sudden gust and the entire kite train came crashing to the ground.

ALOFT ON A KITE STRING

Lieut. Wise at Last Succeeds in His Flying Experiments.

PERSISTED DESPITE FAILURE.

His Ascent Made from Governors Island Yesterday—First Man in America and Third in the World to Achieve Such a Feat.

The kite-flying experiments of Lieut. H. D. Wise, on Governors Island, have at last been successful, and the Lieutenant is the first man in America to go aloft on a kite string. He made an ascent yesterday when the wind was blowing fifteen miles an hour.

Lieut. Wise's kites have attracted attention for six months. They have been numerous, of varied patterns, and flown in twos, threes, fours, and sixes.

The kites used yesterday were of the Hargrave type. They are paralleloiped frames, stiffened by wire braces, and wrapped about at either end by strong cotton cloth. The ends are open, and the space on the sides between the cloth bands is also open. Four of them were used, forming two tandems. The cloth spread about the ends forms the lifting surface. On the smallest kite the lifting surface was 20 square feet, and on the kite which went on the same line with it, tandem, but 150 feet lower, the spread was 90 square feet of lifting surface. These two were raised first, till the lower one had been run out 150 feet, and then the other two were raised similarly and the two strings connected to a common one.

Of the second two kites, one had a lifting surface of 40 square feet and the other 160 square feet. Before these second kites were sent up, the largest of the first two collapsed and it was necessary to pull it in and replace it with a duplicate. The Lieutenant was assisted by Corp. Lewis and five men in raising the first tandem, the quarter-inch manilla rope used being passed around a windlass that had been secured to a tree. Four additional men were then required to hold them while the line was being connected with that of the second tandem. Each was made fast to an iron ring, to which the main line was then attached, and passed about the windlass. This line was of one-half-inch manilla rope.

On the ring was fixed also a pulley block with a line of half-inch manilla rope 100 feet long. A boatswain's chair hung from one end of this line, while the other end was held by two men on the ground. The main line was then played out till the iron ring was about 50 feet above the earth. The chair was held down to the ground and the check line run out through the pulley till it was taut.

Failure and Then Success.

The wind was then from the southeast and the kites were pulling about 400 pounds. Presently the wind's velocity fell from fifteen to twelve miles an hour. Lieut. Wise got into the boatswain's chair and directed the men who had hold of the check line to hoist him up. As they pulled the line through the block, however, it only sagged the main line. The kites were not able to lift him with the wind then blowing. Then the wind increased, the main line tautened, and the men again pulled on the check line, and the Lieutenant was swung off his feet. They pulled him up about twenty feet, and as the wind varied in its velocity the main line sagged and tautened alternately, letting him up and down.

As the check line passed through a device close by the chair, it was subject to the control of the Lieutenant sitting in the chair, as well as of those who held the end on the ground. The Lieutenant came down presently, and waited for a stiffer wind. It came presently and he was again hauled up all the way to the ring, which, with the sag his weight caused, was then forty-two feet above the ground, or a little higher than the eaves of the officers' quarters. By playing out the main line from the windlass he could, of course, have gone higher, in which case the check rope would have been made fast at the chair and the ground end let go. In view of the collapse of the ninety-foot kit at the start, the Lieutenant was not inclined to take the risk, especially as he was not provided with a parachute.

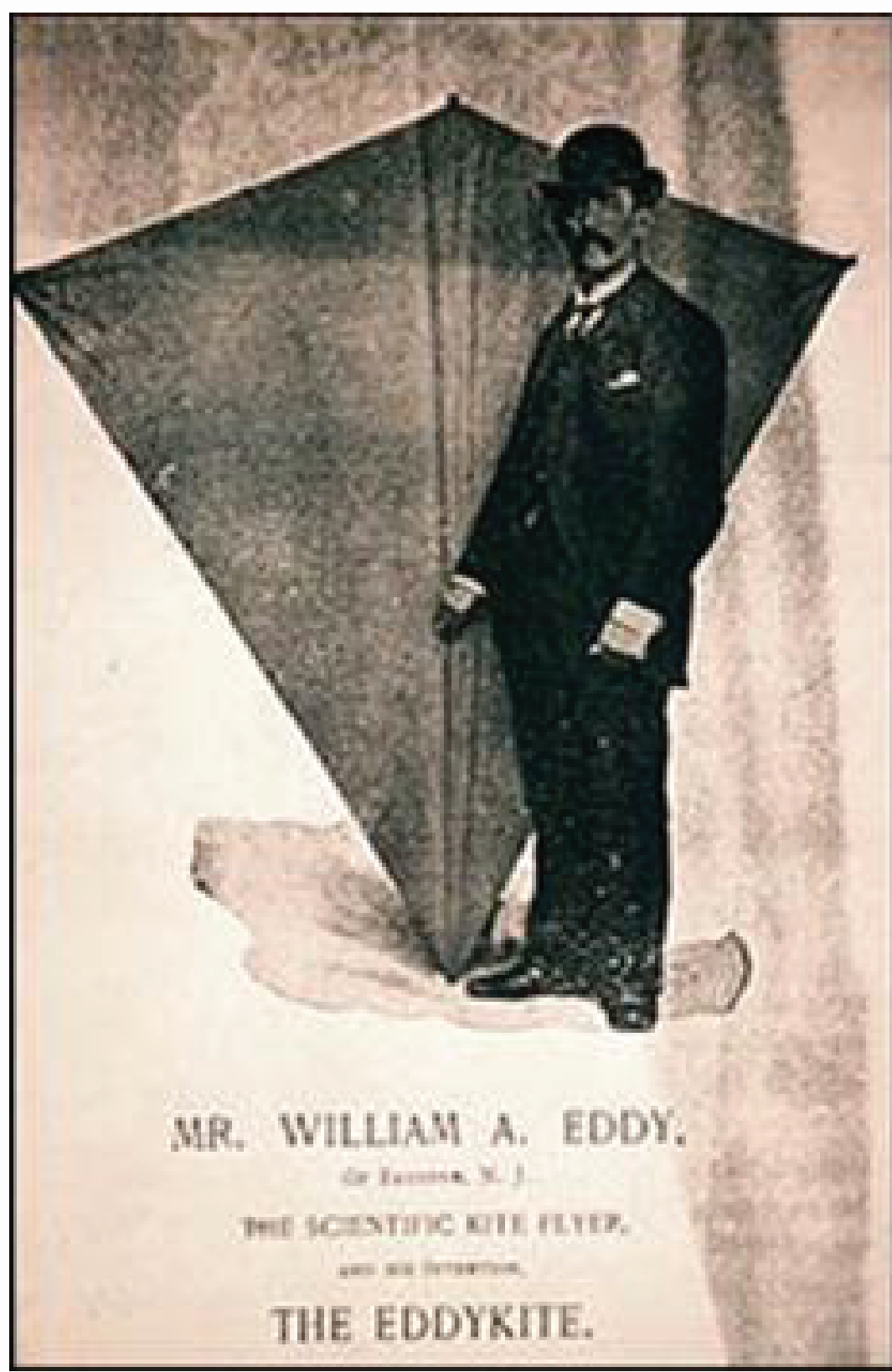
Only Two Other Such Ascents.

Only two other ascents by kites have been made. One was in England by Capt. H. Baden Powell of the Scots Grays, who went up one hundred feet armed with a parachute, the other was by Lawrence Hargrove in Australia, who went up forty feet.

Lieut. Wise, who is connected with the Ninth Infantry stationed on Governors Island, is making his experiments on his own responsibility. He believes that the kite can be made of value for military reconnaissance.

He said last night: "I think that possibly these kites may be exceedingly useful. A number of able students, such as Prof. Langley of the Smithsonian Institution, Prof. Marvin of the Weather Bureau, and Civil Engineer Charut of Chicago, have been investigating the subject. I think that ultimately a kite will be perfected that will carry a man in a gale that would tear a captive balloon to pieces. The portability of these kites must contribute to their usefulness. They will, however, always labor under the difficulties of requiring a strong breeze. The four I used to-day weighed altogether sixty-five pounds. The frames are made of spruce and the covers of strong cotton cloth. They are of the cellular form. Each has four lifting surfaces and four guiding surfaces. The kite is my own modification of the Hargrove kite. The modification is a structural one rather than one of principle, and I do not claim much credit for it."

Lieut. Wise said that he had worked hard and given much study to the methods of those who had been pioneers in this line of effort. "I have never made any experiments," he said, "till I have worked them out in theory. I have had a great deal of bad luck, however, and the number of kites that have broken has sometimes been discouraging. The largest cost about \$12. I have now about sixty kites of many kinds. I use different forms for different purposes."



Lieut. H. Wise was not alone in his quest but part of a three decades movement in using kites for science and military practices, and as a step in the process of creating a flying machine -

1891 - William A. Eddy, from Bayonet, New Jersey developed his tailless, bowed diamond-shaped kite. He had based his kite on the concept of a tailless Malay kite, a kite he did not see until a later date. Trains of Eddy kites proved to be stable and efficient flyers by carrying payloads, such as cameras or meteorological equipment, to great heights. Because of their reliability they were employed at such institutions as the Blue Hill Observatory, Massachusetts, and by the U.S. Weather Bureau during 1894-5. The Eddy kite eventually lost out to the more stable and efficient Hargrave box kite because the former suited gentle to moderate breezes (8 to 18 mph) but above this range they tend to be counterproductive.

1893 - Lawrence Hargrave, born England but immigrated to Australia in 1866, invented the box kite while experimenting with various forms of airfoils in his quest for a stable lifting surface for a "flying machine". He proved his theories by flying test models and being lifted 16 feet from the ground by a train of four of his "cellular kites". Many of Hargrave's kites were based on research by others such as Horatio Phillips. The Phillips' double-surfaced airfoil (cambered wing) created lower pressure above the wing surface than below producing lift (Bernoulli's Principle). He never patented any of his inventions and made his notes on research available to anyone of interest. Following many years of repeated failures in his attempts at powered flight, Hargrave eventually retired from flight research.



Because of the stability and great lifting powers of a Hargrave's box kite it eventually replaced the Eddy diamond and was adopted for meteorological analyses continuously through to the mid-1920s.

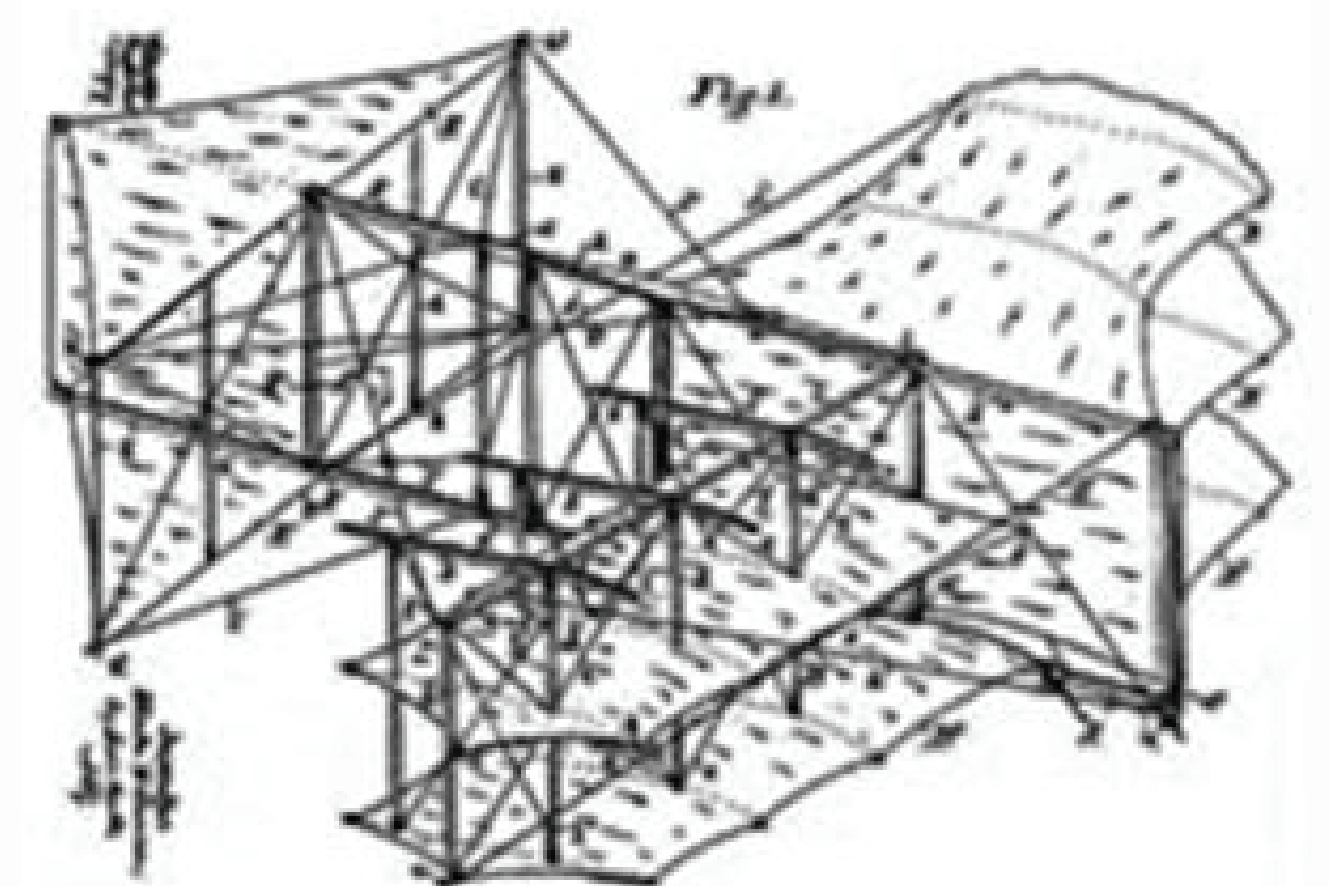


1895 - B. F. S. Baden-Powell, of the Scots Guards (brother of the founder of the Boy Scout), patented his hexagonal, man-lifting Levitor kite (similar to the Japanese Rokkaku). He proved the viability of his kite as aerial observation platforms through man-lifting demonstrations. In the development of his kite, Baden-Powell ignored Hargrave's wing research and relied on the bamboo and cambric-fabric kite's large lifting surface (and Newton's third law of motion). He managed to

compensate for any inherent instability through a bridling system that included tethers points on the ground some distance apart, in order to hold the kite firmly into the wind.

Apart from Guglielmo Marconi making the first transatlantic wireless transmission in 1901 from Cornwall to Newfoundland by raising the receiving aerial some 400 feet by means of a Baden-Powell Levitor kite, the Levitor made little impact.

1896 - An American, Charles J. Lamson began a series of man-lifting experiments with a modified Hargrave box kite. The bi-plane kite was fitted with a movable back cell, which allowed the rear of the kite to be raised or lowered by the pilot, to control the kite's angle of incidence. Through shifting his weight to the right or left the pilot was able to have further control. However, while test flying the kite with a 150 pound dummy a weakness in the struts caused the kite to plunge 590 feet to its demise.



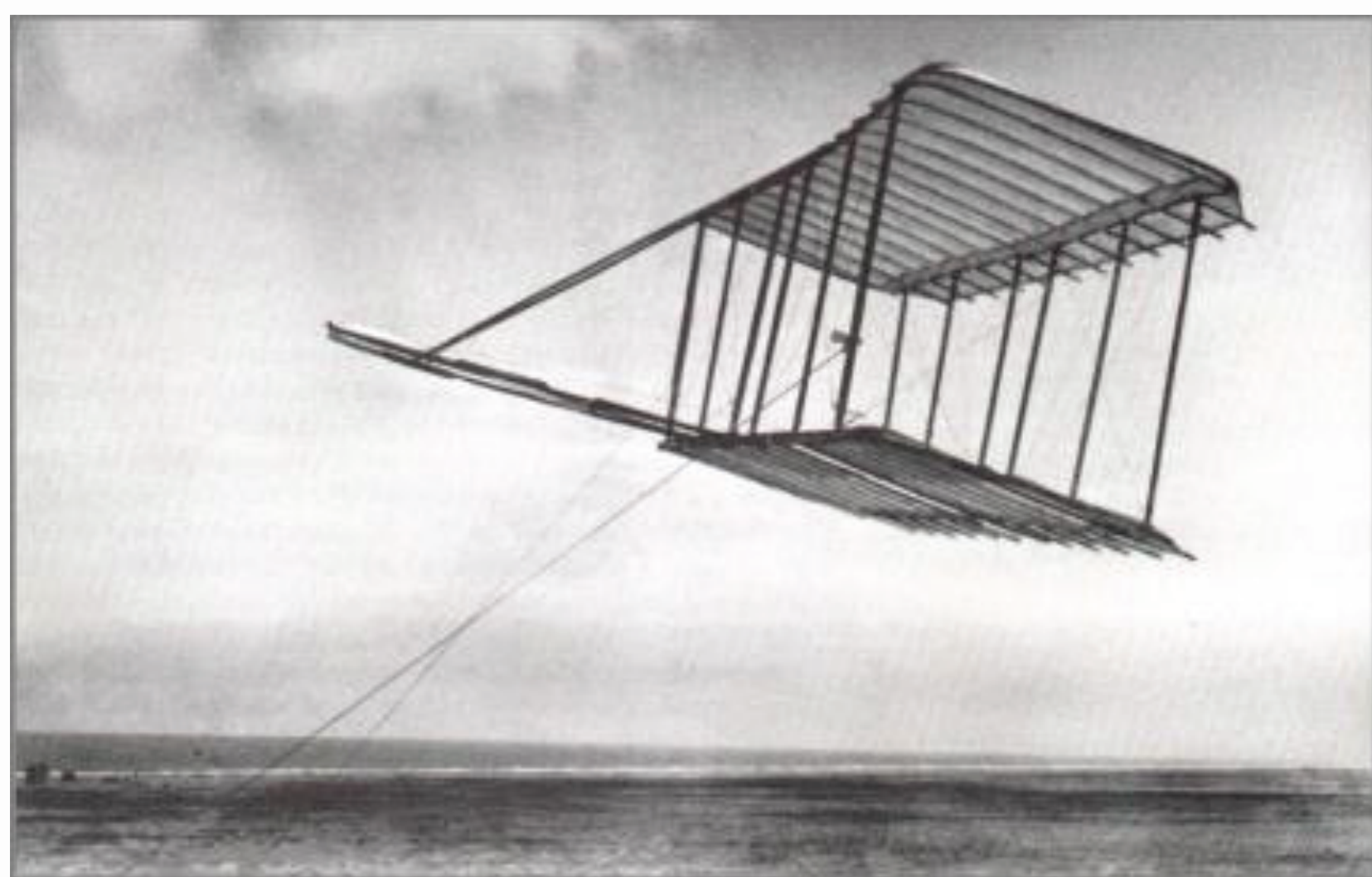
Undeterred by his first kite's structural failure, Lamson went on to build other man-lifters. The efficiency of his final creation was proven in June 1897 when he soared at a height of 50 feet for about a half an hour. He kept modifying his creations until they reflected the shape that airplanes were subsequently to take.



1901 - Samuel Franklin Cody experimented with a number of designs before patented his man-lifting "Cody War Kite", a winged variation of Hargrave's double-cell box kite. He was born Samuel Franklin Cowdery in 1867, in Davenport, Iowa. Cowdery changed his name to Cody in 1889 to "cash in" on Colonel William "Buffalo Bill" Cody notoriety before immigrated to England in 1890.

Cody's first approaches to the British military suffered somewhat because Baden-Powell's man-lifting kites was never put to any practical use by the military. Through his persistence, the British Admiralty eventually allowed kite trials on warships during 1904 and 1905. However, it was the War Office who adopted the Cody War Kite system in 1906 for the Army.

1902 - Silas J. Conyne, a Chicago inventor, patented a winged, triangular box kite for flying advertising banners. In 1905, the French held a competition for a man-lifting kite for their army. Conyne won and his kite consequently has become better known as the French Military box kite



1896 - The Wright brothers became interested in manned flight after a newspaper article on Otto Lilienthal's glider experiments in Germany. In the spring of 1899, the brothers' interest evolved further after reading a book on the scientific study of birds. They both believed it was possible for man to imitate the birds with a machine on a large enough scale. To gain a greater understanding, Wilbur wrote a letter to the Smithsonian Institution requesting publications on flight. In a short time, the much-anticipated package arrived with reprints of

Problems Flying and Practical Experiments in Soaring by Otto Lilienthal; Story of Experiments in Mechanical Flight, by Dr. Samuel Langley; Empire of the Air by Mouillard and a paper by Pettigrew. The Wrights later sent for copies of Octave Chanute's Progress in Flying Machines, Langley's Experiments in Aerodynamics, and several Aeronautical Annuals.

After realizing a stable airplane could not be piloted, the Wright brothers saw their first challenge as solving how to control an unstable flying machine. Fortunately, Wilbur noticed he might have the answer

while twisting an inner-tube box. He theorized it would be possible to imitate the birds by warping an aircraft's wings. The action mechanically causes one wingtip to drop and the other to rise. The Wrights had observed buzzards using a similar motion to turn. Wilbur flew a biplane kite and successfully steered it by twisting and warping the kite's sail by manipulating its four control lines.

