WIRELESS TELEGRAPHY via KITES AND BALLOONS

BY WALDON FAWCETT
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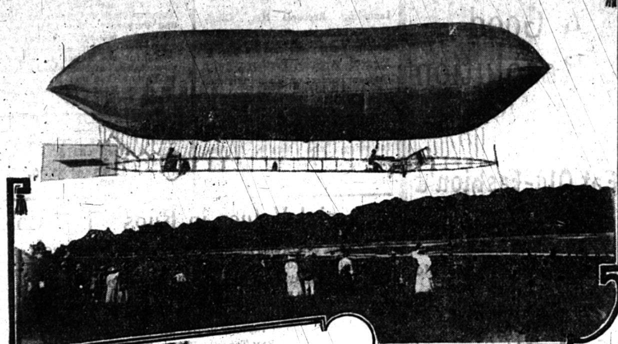
PUBLIC and private interests in the United States are now working energetically to combine the fruits of those two twentieth century innovations—wireless telegraphy and practical sky craft. It goes without saying that if airships and balloons and kites can be successfully made to serve as portable stations for wireless telegraphy the value of such aerial vehicles for the arts of both peace and war will be immeasurably increased. Likewise will wireless telegraphy be enabled to add further advantages to its already numerous points of superiority over all other forms of communication.

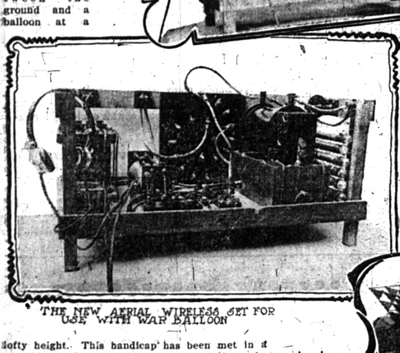
The United States government, through one or another of its branches, has taken up wireless telegraphy experiments via both kites and war balloons, but the greatest interest naturally attaches to the work with balloons. So far as is known, the United States signal corps is in advance of all foreign military bodies in its invasion of this significant field.

While the American army officers early realized the immense advantage that would accrue if war balloons could be utilized as wireless stations, there were several obstacles to be overcome ere practical experiments along this line could be entered upon. Foremost among these was the weight of the standard wireless apparatus of sufficient power for the exchange of messages between the ground and a balloon at a lofty height. This handicap has been met in a portable wireless set which has recently been designed by signal corps experts and the first example of which has lately been completed at the signal corps shops in Washington under the direction of Electrical Assistant H. B. De Groot.

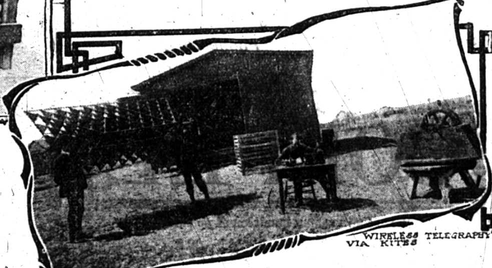


AMERICAN ARMY OFFICERS SAILING IN NEW DIRIGIBLE BALLOON

THE NEW AERIAL WIRELESS SET AND H. B. DE GROOT WHO DEVISED IT



THE NEW AERIAL WIRELESS SET FOR USE WITH WAR BALLOON



WIRELESS TELEGRAPHY VIA KITES

Not only does this compact little wireless equipment conform to the requisite of minimum weight but it affords a solution of the chief problem presented in this new field—namely, the provision of safeguards against a spark from the telegraphic apparatus igniting the explosive gas which through accident or design might escape from the bag of the balloon. There is considerable difference of opinion among electricians as to what danger of explosion would exist under normal conditions. Some experts contend that, considering the air currents created by a balloon in motion there would be practically no danger, but the United States army aeronauts, cognizant of the tragic consequences that would assuredly follow any such explosion at a high altitude, have naturally been loath to take any chance and have had precautionary measures taken in the construction of the apparatus designed for their experimental work.

This wonderful new aerial wireless set, which weighs, all told, only about 70 pounds, occupies or rests upon a wooden frame of special design which measures 30 inches in length, 17 inches in width and 15 inches in height. The electrical energy for this cloud-climbing telegraph station is supplied from an ordinary eight-volt sparking battery, such as is used in automobiles. This part of the equipment weighs but 22 pounds, as compared with a weight of 50 pounds in the corresponding section of the lightest portable wireless set that would have been available for this work, had not the army experts evolved this special apparatus. By way of guarding against explosions, as above explained, the spark gap has been covered so as to exclude all gas and there is similar protection for the interrupter contact. For all that, this latter essential is housed in it always within view of the operator by means of a small mica window in the side of the case and with the view of the contact thus available any necessary adjustments can be made without opening the case.

This new wireless set for military work aloft, which, by the way, cost about $800, has the same type of key and telephone receiver found in the portable wireless sets which have lately made their appearance in the commercial field. A thoroughly unique feature, however, is the "aerial" from which the sound waves are sent on their long journey. The aerial devised for wireless telegraphy via sky scouts consists of three wires, each 150 feet in length, suspended from a cross-arm attached beneath the keel or car of the balloon. It will be understood that these wires dangle below the cloud clipper and thus incoming messages, instead of being caught above the station, as in all earthly installations, will be caught below the station. In lieu of a ground wire the aerial telegraphers will make use of the wire netting which braces the balloon car.

The army's first experiments with wireless telegraphy via aerial craft were made with an ordinary spherical balloon, but the new wireless set was designed primarily for use with the war department's lately acquired dirigible No. 1 and when in service the wooden platform carrying the electrical apparatus rests across the keel or skeleton framework of the balloon, being supported upon two horizontal rods of the keel. The dirigible which is destined to serve as Uncle Sam's first portable aerial wireless station is 120 feet in length and the car or keel which carries the wireless apparatus is made of spruce.

While the electrical division of the United States signal corps has been busy with plans for wireless work via free balloons that would prove of immense value in time of war, other branches of the federal government have been looking into the possibilities of mid-air telegraph stations designed to serve the pursuits of peace. Chief Willis Moore and his associates of the United States weather bureau have long taken an especially keen interest in this subject and interesting experiments covering high-air work with both balloons and kites have been in progress for some time past at Mount Weather—that Virginia mountain peak where the weather bureau has assembled such marvelous equipment for the exploration of the upper air. Prof. Moore's primary interest in wireless telegraphy is as a means of transmitting storm warnings and weather forecasts, particularly the interchange between ships and shore stations.

It may surprise many persons to learn that wireless telegraphy via kites preceded by many years wireless telegraphy as we know it to-day. Forty years ago, long before either Marconi or the Hertzian waves were ever heard of, a resident of the national capital, Mahlon Loomis by name, announced that he had solved the problem of transmission without wires by the expedient of raising kites to great altitudes and telegraphing between them. He claimed to have transmitted messages a distance of more than 400 miles, and such was the interest in his work at the time that congress passed a special bill authorizing the incorporation of a company to continue and extend the experiments. However, the project came to grief in the panic of 1873.

Latterly, when the development of wireless telegraphy again turned attention to the possibilities of the use of kites as ending and receiving stations it has been demonstrated that the kites have exceptional qualifications for such functions. When a kite is flown at a great altitude a strong current of electricity is generated, especially when the kite is flown by wire instead of by cord. At Mount Weather, where piano wire is used, so strong a current is brought down from the clouds that it has been necessary to insulate the reel on which the wire is wound. This presence of the magic current in force is manifest even on clear days, when there is no suggestion of an electrical storm. Now, experiments are in progress with a view to using this captured current for wireless telegraphy. Telegraph instruments are cut in on the kite circuits and ere long a test is to be made as to the possibility of communicating between two kites flown at points located 60 miles apart.

Prof. Alexander Graham Bell, inventor of the telephone, who has been engrossed for several years past in experiments with kites formed from tetrahedral cells and who has latterly designed a man-lifting kite that has made some wonderful performances, has included wireless telegraphy as one branch of his kite investigations. For this telegraphic work he has employed a kite of comparatively modest size, preceded by a small pilot kite, and these have usually been flown at a height of about 2,000 feet. The kites carry aloft telegraphic equipment in the form of ordinary green electric-light cord, to the upper end or receiving terminal of which is attached 400 feet of antennae wire. The telegraph operator is stationed close by the reel of piano wire—the point from which the kite is sent up.

Dr. Bell has had the co-operation in these experiments of Mr. De Forest, inventor of the wireless telegraphy system which bears his name, as well as the aid of other wireless telegraphy experts. The original kite messages via the artificial birds sent aloft by Dr. Bell were transmitted a distance of only six miles, but gradually this was increased until the transmission attained hundreds of miles and included the exchange of aerograms with steamers more than 100 miles at sea. In one experiment the telegraph operator caught the messages after passage through the bodies of two men who stood at the side of the receiving instrument. The men clasped hands and one grasped the telegraph wire from the kite with his free hand, while the other held in his the receiving instrument.

How She Identified Twins.

The Beverly twins, Fred and Frank, were such exact counterparts of each other that none of the neighbors could tell them apart and even their mother sometimes had her doubts. The resemblance is accentuated by the fact that they are dressed exactly alike.

"How in the world can you yourself tell which is which, Mrs. Beverly?" asked a caller one day.

"To tell the truth," she answered, "I can't always; but if I hear a noise in the pantry and I call out, 'Fred, is that you?' and he says, 'Yes, mamma,' I know it's Frank, and that he's in some kind of mischief."—Youth's Companion.

GAME PLAYED IN THE CLOUDS

Something Not Unlike This May Be Witnessed If Inventions Keep Coming Forward.

The aeroplane football match that took place yesterday between Harvard and Yale was largely attended, the air around the contesting teams being packed. The goals, which consisted of gas bags connected by chains, were kept at an equal distance apart by the Aerospace Company with their magnetic controllers. The ball itself, an armored balloon, had a tendency to get away and mount upward, but didn't leave the players' hands long enough to get far.

Smith of Harvard won the toss and sprinted the ball through a fog bank, where it was received by Jones of Yale, who had only just started to fly when he was tackled by the Harvard half back, Robinson, and his wings torn off in a jiffy. His wing holder was on hand, however, and he was held up and new wings adjusted before elapsed time.

A flying wedge was then formed by Yale, but without effect, as it wasn't ballasted properly and got the broad side down before they could prevent it.

Black of Harvard grabbed the ball and flapped through straight to goal. Score for Harvard.

When the Harvard team parachuted back to earth they were given a tremendous ovation.

The last seen of the Yale team they were wandering around the sky, too ashamed of themselves to land.

True Enough.

"De man dat makes a stiddy practice o' singin' 'I won't go home till mornin',' " said Uncle Eben, "is likely to find out befo' long dat as fur as he's concerned dar ain' no home."—Washington Star.

Take Long to Enumerate.

When I don't sleep I just count my blessings. That's a splendid thing to do, because you fall asleep before you get to the end of them.—Margaret Deland.

Named in Honor of King James.

Albany, N. Y., at first called Beverwyck and later Willemstadt, was named finally in honor of King James II., who was also duke of Albany, as well as of York.

A Matter of Degree.

"You got off lightly with a second-degree verdict," said the lawyer. "Sure," said his convicted client, "but the third degree the police gave me first was a tough proposition."

Boredom Long Existent.

Boredom is the oldest trouble in the world. It came into existence with man, though it was a woman who first recognized it.

Approaching the Perfect Life.

Have good will to all that lives, letting unkindness die and greed and wrath; so that your lives be made like soft airs passing by.—Light of Asia.

Just Football.

He stood on the bridge at twilight as the game drew near its close. In triumphant mood he steadfastly stood on the bridge of the halfback's nose.

Need of Common Sense.

Common sense is a thing which no one seems to pray for, but which many lack. I only wish it could be added to the litany.—Exchange.

Civility Always Pleasing.

Civility is the [illegible] of the poor. If we have nothing else to give we can give that.

Just as a Leaven.

A little folly is desirable in him that will not be guilty of stupidity.—Montaigne.