

WIRELESS COMMUNICATION WITH BALLOONS.

On May 13th, 1908, an ascension was made with the United States Army Signal Corps balloon No. 10 with Lieut.-Col. F. P. Lahm, Major E. Russel, and Capt. E. S. Wallace as passengers. Major Russel assisted by Capt. E. S. Wallace made some wireless telegraph experiments in this connection.

The basket of the balloon, which is about five feet long, four feet wide, and three feet high, was surrounded on three sides by light galvanized wire netting about two and a half feet wide, the surface being about thirty square feet. When the balloon had ascended to a height of about one thousand feet, a flexible phosphor-bronze wire three hundred feet long, such as is used in our army, was paid out from the net of the basket not occupied by the wire netting. The wireless receiving set consisted of a tuning device and small condenser similar to that used in the field wireless set connected with a silicon detector. A Sullivan telephone receiver was used.

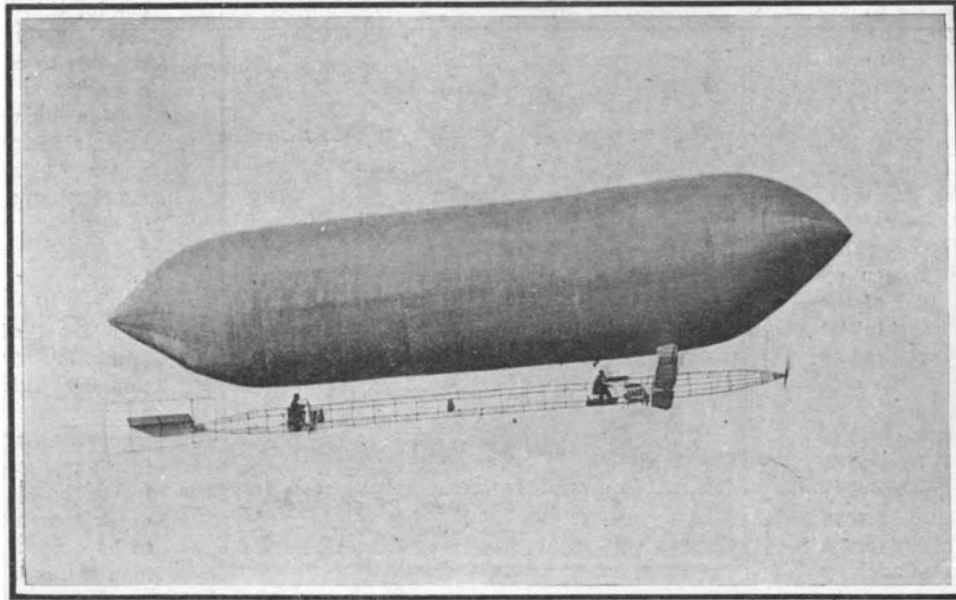
The Washington navy yard station and the Annapolis station agreed to begin sending signals every fifteen minutes for five minutes each. The Washington station began at 1:45, and the Annapolis station at 2:30 o'clock. This sending was to be kept up until 3:30 o'clock. Signals were immediately picked up from the Washington station, although not very clearly, and the reception of signals continued until the balloon was about six miles away, when the Washington station could no longer be heard. It was learned that the Washington station was being overhauled, and that only one of their small sets was used.

Signals from the Annapolis station were picked up easily as soon as the sending began, these signals coming in so loudly and clearly that it would seem as if the excellence of this means of receiving would be all but equal to that of the land station. During each of the sending periods after this until 3:30 o'clock the Annapolis signals came in clearly, the distance from that station varying about twenty miles at the beginning to ten miles at the close. No disturbance from atmospheric electricity was apparent, although the vertical antenna was several times left disconnected for some little period, in order to see if any spark could be obtained between it and the netting. No spark could be detected.

It is believed by the army officers who made the experiments that this extension of the use of wireless telegraphy may prove of considerable value in extend-

Aeroplane Flights in America.

The efforts of the numerous experimenters in the United States and Canada are beginning to show results in the form of short flights by a number of embryo aviators just at the time when public interest in flying machines is becoming sufficiently great to cause the organizing of aviation meetings with liberal prizes, such as have been held in Italy, Germany, and England recently with the Rheims meeting in France as a model. The first such meeting in America to have more than one aeroplane make flights occurred last week at the Latonia race track at Cincinnati, Ohio. Besides flights by Glenn H. Curtiss, Charles F. Willard also made a number of successful flights with the biplane of the Aeronautic Society, which is the first



U. S. Army dirigible No. 1 (Baldwin type) with which wireless experiments may possibly be conducted.

aeroplane Mr. Curtiss built for sale. When Mr. Curtiss damaged his machine by hitting a wagon in alighting, the spectators were not obliged to leave disappointed, since Willard made some excellent flights. Roy Knabenshue, Lincoln Beachy, and Cromwell Dixon, the 17-year-old aeronaut, all made excellent flights in their dirigibles, and the three-day meet was a decided success.

Encouraged by the success of Mr. F. Raiche in getting his small biplane off the ground at Morris Park some time ago, a number of other members of the Aeronautic Society have been actively engaged in completing their machines. The second biplane to make several short flights there was that of P. Brauner and A. J. Smith. In the morning of October 31st Mr. Brauner flew about 350 feet at a height of 8 feet, and in the afternoon Dr. Green made a flight of some 250 feet.

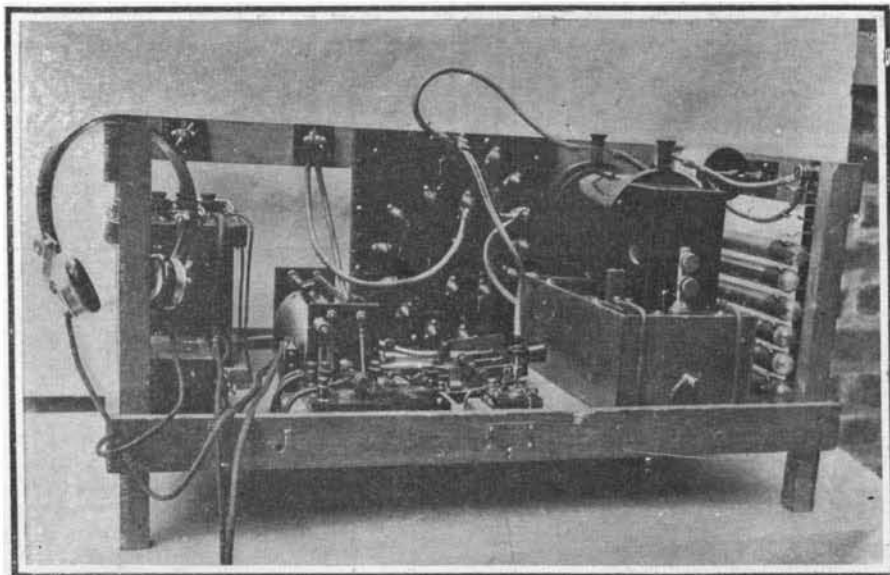
plane, however, as the power plant is much heavier.

Another experimenter who has gotten off the ground and made flights of several hundred feet lately is Mr. Frank Van Anden, of Islip, L. I. Mr. Van Anden's biplane is a very light machine, weighing complete with a 15-horse-power motor but little more than 200 pounds.

At the Petewawa military camp in Canada, J. A. D. McCurdy also made a number of excellent flights recently with his new "Baddeck No. 2" biplane. The new machine, which was constructed after the "No. 1" was demolished in an accident, has shown excellent speed and stability. It is fitted with a relatively heavy 4-cylinder water-cooled motor having a single propeller on its crankshaft. In general design it is like Curtiss's, being, like his, the outcome of the experiments of the Aerial Experiment Association. Mr. McCurdy had hoped to take his machine to England and fly there for the \$5,000 prize of the Daily Mail offered for the first mile flight in a circle by a British-built aeroplane piloted by a British aviator. Capt. Cody, the American who has been experimenting in aeronautics for some time past for the English army, recently became naturalized so as to compete for this prize with his aeroplane. But both aviators have lost this opportunity, since Mr. J. C. Moore-Brabazon, a well-known English sportsman, has lately won the prize with a machine resembling the Wright, but having peculiar balancing planes between the main planes at their ends instead of warping the latter.

Gasoline vs. Alcohol.

A gallon of denatured alcohol can be made to do the same amount of work in an engine as a gallon of gasoline; moreover, the alcohol does not produce smoke and is less liable to yield obnoxious odors, but the lower price of gasoline makes it the cheaper fuel. These conclusions, based on the results of 2,000 comparative tests of the two substances as engine fuels, are given in Bulletin 392 of the United States Geological Survey. R. M. Strong, the author of the bulletin, briefly describes the tests but discusses the more important results at some length. The tests formed part of the investigation of fuels now being carried on by the Survey. To determine the relative efficiency and economy of gasoline it was compared with denatured alcohol. In this comparison not only the heating values of the two fuels but their adaptability to engine use and the effects of variations in fuel quality and in the principal operating conditions—such as load, fuel supply, and time of



Detail view of the aerial wireless set. Note the masked spark gap in the upper right-hand corner of the frame.



The wireless set employed by the Signal Corps for aeronautic use. The total weight is about 70 lbs. An 8-volt, 20-lb. accumulator supplies the current.

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ing the usefulness of an aerial reconnaissance. It may be regarded as certain that at least over distances no greater than were worked at this time, a sending set could have been utilized. It will be necessary, of course, to provide some means of masking all of the apparatus which might produce hot sparks, and it is probable that a special means of preventing the gas from pouring from above should also be provided.

The photographs herewith presented show a sending and receiving outfit that has been prepared for the War Department for use on a balloon, but there is no record describing this apparatus or describing any contemplated use thereof. Since the apparatus was designed for aeronautic purposes, it seems not unlikely that it may be used with the Baldwin dirigible.

The following day, after getting off the ground once, Mr. Brauner, in a second attempt, sent the machine aloft too suddenly, with the result that it lost headway, dropped backward to the ground, and was smashed. The aviator pitched forward but was not hurt. Using the same motor—a 25-horse-power A. & B. 4-cylinder water-cooled engine of 260 pounds weight—upon his biplane, Dr. William C. Green got off the ground and made six flights of from 30 to 100 feet in length at Morris Park on the 12th instant. The last flight was made at dusk, and a wheel was broken in alighting. Both of these biplanes resemble the Curtiss in design, having balancing planes and a single propeller on the engine shaft back of the main planes. They are both larger machines than the Curtiss bi-

plane, however, as the power plant is much heavier. Tests were made with gasoline and alcohol in the same engine and repeated in other engines of approximately the same size (10 and 15 horse-power) and the same piston speed, with different degrees of comparison, different methods of governing, and different combustion.

If most Americans were asked which is the highest mountain in the United States, they would probably answer Mount Rainier. As a matter of fact, the honor belongs to Mount Whitney, which exceeds Mount Rainier in height by less than 200 feet. The summit of Mount Rainier is 14,363 feet above mean sea level, and that of Mount Whitney, by checked leveling, is 14,501 feet above mean sea level.