

We started immediately to follow them, but the roads were so muddy that we were soon left behind. The kites rose and fell as the end of the wire caught temporarily on a tree or fence and broke loose again. After traveling 10 miles we came to a place where the kites were caught in the edge of a large forest in the Verdigris River bottoms. The end of the wire was tied around a small branch in the top of a 75-foot tree.

As it was nearly dark and there was a strong probability that if the tree were cut, the wire would break loose again and the kites go farther into the forest, it was decided to return home. We had not gone far when we discovered that the gasoline was nearly gone, but after a search of the countryside sufficient fuel for the return trip was found.

Monday morning we returned to the scene; one kite was seen flying just below the clouds some distance within the forest. Foreseeing the possibility of having to fell some trees, we borrowed an ax and a cross-cut saw and started into the wood. The ground was covered in places with 3 or 4 inches standing water, and the only landmark was a creek which we followed. The kite was high and the visibility poor so that we could not tell whether the kite was flying toward or away from us. After traveling about 2 kilometers into the forest a faint singing of the wire was heard, and eventually it was sighted 100 meters in the air. Some distance away it was caught in the tops of several tall trees. Two large oak trees were then cut and the wire was brought within reach.

Noon came, and we were getting hungry. We returned to the truck and fortunately found a farmer who took us home to dinner. After dinner the kite was lowered by wrapping the wire around the stumps of two saplings cut off for the purpose 4 feet above the ground. When the kite was within 500 meters it began to fall and came down in a small tree from which it was recovered undamaged. It was the head kite; the secondary had come down during a lull Sunday night and became detached from the wire, allowing the head kite to rise again. The secondary was found several days later not far from the place where the kites originally caught at the edge of the forest.

This is the longest continuous flight ever made here. Although the wind had veered through 270 degrees and fallen to rather low velocities at times, the kites remained in the air about 52 hours. Other kites have gone farther, as on April 8, 1919, when 5 kites broke away and landed 6 hours later in Kansas, 160 miles northwest of the station. On this date a strong northerly surface wind veered into a strong southerly wind at 3 kilometers altitude. Thus the upper and lower kites continued to pull against each other throughout this remarkable flight.

Although kites at this station have collapsed or broken away on numerous occasions, no material damage has ever befallen the delicate meteorograph which is carried in the head kite. This is partly the result of the way the instrument is tied in the kite, which acts as a spring for the instrument when the kite suffers any sudden jolt.—*J. A. Reihle.*

---

#### INDEPENDENT NATIONAL WEATHER BUREAU FORMED IN BRAZIL.

After a hard struggle against adverse factors and a serious crisis which benumbed the Brazilian Government and commerce, Dr. J. de Sampaio Ferraz at last obtained a decree creating an independent Weather Bureau for Brazil, and had the honor to be appointed its first director. He is now striving to ob-

tain a new building and the incorporation of the State services. The initial appropriations for the new service provide for a network of aerological stations, but the amount is inadequate for the original plans because of a fall in exchange amounting to about 50 per cent. since the estimates were made. In a "Foreign Circular No. 1," dated June 28, 1921, Dr. Ferraz states:

The "Directoria de Meteorologia e Astronomia" of the Brazilian department of Agriculture has been divided in two separate services, "Directoria de Meteorologia" and "Observatorio Nacional."

The new "Directoria de Meteorologia," which was placed under my direction, will continue the climatological work established in 1909, making uniform the methods of all meteorological activities in the country and publishing all available data of the last ten years. I hope to be able to put out nine yearly bulletins by the end of this year. The Directoria will also establish a forecast service for central and southern Brazil; an aerological service for the aviators and general progress of meteorological science, creating kite and pilot balloon stations; a special coast service for navigation; an agricultural meteorology service; a marine meteorological service; a special service of rains and floods, and the usual investigations in every department of meteorology, principally those which may lead us, possibly, to longer ranges in forecasting weather. The Directoria will strive to explore conditions over land and ocean, in and near Brazil, and do its best to present quickly the results to every meteorological institute of the world, being very pleased to receive their suggestions and counsel. All information concerning the whole of Brazil will be promptly given with pleasure. Rio Grande do Sul, Minas Geraes and S. Paulo continue with their state services but under the supervision of the Directoria. The Reclamation Service of semi-arid northeastern Brazil will maintain its rain organization.

The Directoria will be able to attend to any foreign requests of data from these separate services.

---

#### NOTES.

Dr. Sampaio Ferraz, Director of the new meteorological service of Brazil, writes that he is getting up a series of rainfall maps for Brazil which will be published together with other works by the 1922 Independence Exposition Committee. Brazil is preparing this great exposition which will celebrate the 100th anniversary of Brazilian independence.

In astrophysical research the (Smithsonian) institution was unusually active. Through the generosity of Mr. John A. Roebling of New Jersey, the Smithsonian solar observing station located on the plain near Calama, Chile, was moved to a nearby mountain peak, where the observations will be unaffected by the dust and smoke, and a new station was established on the Harqua Hala Mountain, Arizona, probably the most cloudless region in the United States. From daily observations of the radiation of the sun at these two widely separated stations, it is hoped to establish definitely the value of the "solar constant" observations in forecasting weather. Dr. C. G. Abbot, director of the work also describes the successful operation on Mt. Wilson, California, of a solar cooker devised by him. With this apparatus it was possible, using only the sun's heat, to cook bread meat, vegetables, and preserves—(Excerpt from outline of the work of 1920 published by the Smithsonian Institution, and reprinted in *Science*, July 22, 1921, pp. 68-69).

Donald B. MacMillan sailed from Wiscasset, Me., on July 16 for Baffin Land on the 115-ton schooner *Bowdoin*. The program of the scientists of the expedition calls for field work in zoology, botany, geology, meteorology and terrestrial magnetism. Special observations will be taken of the magnetic pole, which was located first by James Ross in 1830 on the further side of the Boothia Peninsula, not far from Mr. MacMillan's proposed winter camp.—*Science*, *ibid.*, p. 71.

The Baltimore office of the Weather Bureau, in coöperation with the Mary-