

THE FIRST DIRIGIBLE IN AMERICA TO CARRY 3 PASSENGERS.

In the June number we told of the first flights of the Knabenshue dirigible 1908 and below are the first photographs published.

On June 11 two flights were made, one in the morning against a 4-mile wind and one in the afternoon against a 15½-mile wind and on both occasions Mr. Knabenshue states, he made a speed of 25.2 miles per hour and that there are "several little obstacles to overcome before I can go on making that speed, as a great quantity of gas leaves the ship during the flights."

On the 15th another trip was made, carrying Wm. C. Chadeayne, of the Aero Club of America, resident at Buffalo.

The bag measures 112 feet in length by 17½ feet in diameter. The frame is 62 feet long and measures 40 inches each leg of the equilateral triangle cross-section. The parts of the frame are connected by small aluminum castings. No. 25 music wire is used for bracing. The stringers are 1¼ inches spruce, joined by pieces of tubing bolted together.



KNABENSHUE DIRIGIBLE IN FLIGHT.

The front bearing takes all the load and for the purpose there is a ball thrust bearing and the shaft is made to run on rollers contained in this front bearing.

The shaft is 14 gauge Shelby tubing, with a reinforcement at the propeller end 6 feet long, brazed at extreme ends; and 3 feet long at driving end also brazed at extreme end. The shaft is suspended by small bronze castings turned up. From 3 lugs wires are fastened to stub steel which passes through the stringers at the point where uprights are joined by aluminum casting. These pieces of steel are threaded and can be drawn tight in such a manner as to line up the shaft.

The rudder is 10 feet long by 5 feet high, made of bamboo poles securely fastened together with stove pipe wire, then bound with cotton cloth and varnished with shellac. The covering is Lonsdale cambric.

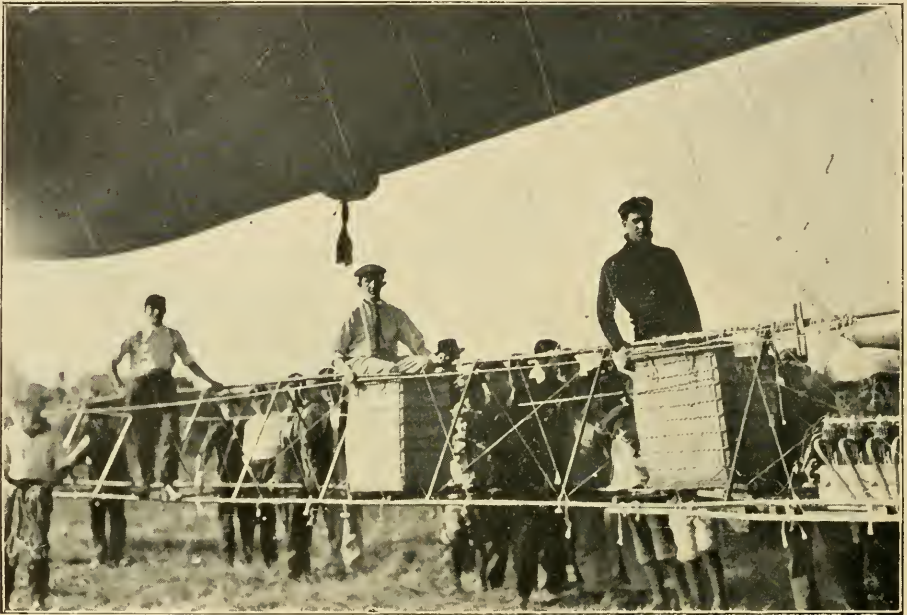
Attached to the middle section of the rudder is a double set of aero-planes which measure 15 feet long by 3½ feet wide and when attached to rudder present a horizontal surface of 104 square feet. This is intended to prevent pitching.

The envelope is constructed of Japanese silk costing \$1.50 a yard. Then there is added another layer of silk costing 65 cents a yard. Over this again is sewed pongee silk cut in ribbons 1 inch wide and spaced every 4 inches. These bands pass over the top. At the bottom of these bands are sewed pongee silk strips 14 inches wide for 4-5 the length of the bag. Then to this is sewed the suspension band, made of 4 thicknesses of pongee silk. From the points of the bag, on the under side, is a layer of silk costing 50 cents a yard and these two pieces of silk run back for 25 feet towards the middle, and to these two pieces are attached what Mr. Knabenshue calls the "hold back" bands. The bottom side of the balloon proper is a single thickness of

silk. 20 feet to the rear of the center of the balloon is attached a 24-inch neck. 8 feet to the rear of the neck is the opening through which the tube of the balloonette is inserted.

The balloonette is merely a cylinder with a capacity of 3500 cubic feet and made of silk costing 65 cents a yard.

The engine is a 4-cylinder 2-cycle water cooled pattern, 3½-inch bore by 4-inch stroke, has a base compression of 15 lbs. and a cylinder compression of 55 lbs. A carbureter is used for each cylinder.



VIEW SHOWING FRAME AND BASKETS.

For a radiator is used tubes 40 inches long, made of 30 gauge brass and there are 27 of these tubes. The whole system contains but 2 gallons of water, forced through the system by a rotary pump. The engine and cooling system weighs only 145 pounds. It is expected that the engine will develop 25 horsepower.

The drive shaft is direct connected and the 9-foot propeller will turn at 1000 r.p.m., it is expected.

Two wicker cars are provided to the rear of the motor, one on one side of the upper stringer of the frame and one on the other. The third occupant of the airship sits astride the frame as of yore.