

HOW BALDWIN'S "CALIFORNIA ARROW" NAVIGATES THE AIR

ST. LOUIS, Nov. 5.

IMMENSE strides have been made in the field of aerial navigation at the Louisiana Purchase Exposition in the last few weeks, stimulated by the \$100,000 prize offered by the management, and the achievements of A. Roy Knabenshue, a daring young aeronaut of Toledo, Ohio, who pilots Capt. T. C. Baldwin's California Arrow, have demonstrated that the airship may be guided through the air at will with all the ease of an automobile on a smooth roadway. There is no doubt that his ascensions, while disaster has sometimes come to the frail mechanism of his craft, have been the most successful ever made in the United States.

Baldwin's Arrow is in the shape of a very fat cigar 52 feet in length and 17 feet in diameter at the centre. It contains 8,000 cubic feet of gas. To a saffron-colored silk gas bag is attached the frame, constructed of steel and aluminium. The frame is about 40 feet in length. Attached to the forward end of the frame is the propeller, like the screw wheel of a steamer. The motive power for this propeller, which sucks the wind, is furnished by a small gasoline motor situated toward the forward end of the frame. It weighs only sixty-six pounds. The navigator's seat is further back toward the middle, and owing to the size of the craft the navigator cannot move up as far forward as the engine to put it in repair.

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A. Roy Knabenshue, who conducts the Arrow, was unknown in the airship world until the opening of the contests here. Since the beginning of the fair he had been employed about the aerodrome, and when Capt. Baldwin came on to St. Louis with his machine he "sighted" Knabenshue, because of his firm resolution and daring desire to navigate an airship. When the first ascension was made with the Arrow on Oct. 25 Knabenshue was at the helm. The flight was started from near the centre of the concourse at 1:52 P. M. When the order was given, "All hands let go," the ship began slowly to rise as the propeller began to whirl, and in a moment it was slowly floating away. Its nose was pointed to the south, and as it rose Knabenshue pulled on the rudder rope so that it veered to the west in order to reach an elevation sufficiently high to clear the fence surrounding the concourse. Clearing the tall aerodrome by a few feet, the ship gracefully sped over the building to the far western end of the concourse and then started back, executing a perfect turn. Knabenshue then felt that he was in control of the machine and started off to the south over the fair grounds. When he had gone a hundred yards he turned to the east and moved gracefully over the white city, until suddenly there was a pop and the propeller ceased to turn. The motor had "gone dead," and there was no way to fix it in the air.

Knabenshue, 2,000 feet in the air without

any motive power, began to grow uneasy, especially when he knew that he was bearing toward the river every minute. Still he knew that it would be next to impossible to land with any degree of safety in the city, and so he drifted while thousands of persons gathered in the streets, on their porches, and on top of all the large office buildings to see what it was. For fear that he might go down in the middle of the river Knabenshue began to throw out his ballast, and he came near throwing too much away, for his craft suddenly shot upward and seemed to become almost lost among the clouds. He seemed to be a mere speck in the sky. In describing the flight to friends afterward he said the housetops were lost in a mere blur and the river looked like a silver band.

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After safely crossing the river he began to let out some of the gas to bring the machine down. It readily responded, and after traversing some four miles of country beyond the river came gracefully down in a plowed field. This was at 3:23 P. M. Knabenshue's flight had attracted some farmers, and they ran to him and assisted in landing the machine.

On Oct. 31, preparations having been made complete for another trial, Knabenshue and Capt. Baldwin took out the Arrow at 2 o'clock. The weather conditions were ideal. There was not the slightest sign of a wind. Knabenshue took his seat in the frame and gave the order to "Let go." As the propeller began to revolve the ship lifted herself slowly upward, and in two minutes was sailing majestically over the high fence on the south side of the con-

course. Knabenshue then started off across the fair grounds, circling around the Ferris Wheel, and returning to the centre of the grounds. From this point he sailed east and made a trip over the Plaza St. Louis. Now he started back to the concourse.

All during this time he had been rising gradually higher and higher, until he was about 2,000 feet above the ground. When about over the concourse again Knabenshue began to cut such antics as probably were never seen in the air before. He circled around, then made the figure 8, the letter S, and then started off on a tangent. After numerous cavortings he came back to the concourse and landed within 100 feet of where he started, settling as gently as a bird.

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During the flight of the machine, however, a speed of only ten miles an hour was reached, while a speed of twenty must be made in order to qualify for the \$100,000 prize. In order to test the speed of the machine it was arranged to send the Arrow over a fifteen-mile triangle on Nov. 2. It was extensively advertised this time that the flight was to be made, and nearly 5,000 persons gathered in the concourse to witness the flight. A series of accidents such as has probably happened to no other aeronaut followed, preventing Knabenshue from carrying out any of his plans.

Shortly after 2 o'clock Knabenshue, having taken his seat in the frame, gave the order to "Let go" and started upward. Again the ship glided smoothly upward and started off to the northeast. When he had sailed probably 500 yards, suddenly the

propeller stopped. For three-quarters of an hour the ship remained in about the same position, with the exception that it continued to rise higher. After about a mile of drifting, Knabenshue let out some of the gas, and the airship began to descend slowly until it came to the ground. Capt. Baldwin and his assistants, who had followed in an automobile, were on hand to help Knabenshue alight. After some little time they fixed the motor, and then Knabenshue did what no other aeronaut has ever attempted. He started back to the concourse in his airship. When he had reached an altitude of 200 or 300 feet he headed directly for the concourse, and was within 500 yards of the high fence surrounding it when the motor gave out again.

There was another dead stop, and again the machine began to drift. Instead of remaining steady as before, this time the ship reeled around and around as it was struck by the wind, and finally after ascending until it reached a swifter current, started off to the northwest at a rapid gait. The further it went the higher it got until it was lost in the hazy atmosphere. Capt. Baldwin and his corps followed as before in the automobile, but it was a greater journey this time. Though he let out gas, it was not until the ship reached Normandy that Knabenshue was able to make a landing. This time he came down in the middle of a field.

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Too much gas was gone from the bag to attempt to ride back in the machine, so it was decided to tow it back by the cable. It was after 5 o'clock when they started back, and they did not get into the World's Fair

Grounds, seven miles distant, until about 8. In order to take the ship into the gate of the concourse it was necessary for it to pass over a network of telegraph and telephone wires. It was arranged to pass one of the forward guy ropes over the telegraph wires and hold it fast on the other side until the other forward rope should be passed over. All went well with the passing of the two forward ropes, but while they were making the first back rope fast the two forward guy ropes gave way and the machine started up with a lurch. Knabenshue was holding the only rear rope which was in a position to afford any security, and the lurch was so sudden that it was jerked through his hands, badly lacerating the flesh of one of them.

All its guy ropes free, and with no one in the carriage, the airship plunged away in the darkness and was soon lost sight of. Capt. Baldwin was unable this time to follow the machine, and it drifted away with the current.

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KNABENSHUE'S STORY OF HIS FLIGHT.

By A. Roy Knabenshue.

Sailing an airship—such an airship as Tom Baldwin's Arrow—is play. It is the finest of all sports, and once on it, riding through the air, high above the earth, with the vessel answering perfectly every move of the operator, you feel like you never want to come down.

To-day was my first real ascension in an airship. My flight last Tuesday was in reality only a balloon ascension most of the way, because of the unfortunate breakdown

of the engine when only a short distance out. But to-day was the real thing, and it was play to manage that plucky little "tyke" of the air.

From the jump she behaved splendidly, and just as though she knew that thousands were looking on, and that Tom, her master, would be disappointed if she didn't do her best. There was never a moment of the trip that she didn't obey every movement of the rudder, and she sailed whichever way I wanted her to and whenever I wanted her to.

We didn't drift one foot. Although I struck a current of air when up about 2,000 feet, which was the height at which I sailed most of the trip, I had absolutely no trouble in going just the direction in which I chose to go.

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It was great up there in the clouds. I didn't have a nervous moment once I left the ground and was clear of that lattice fence and the eager crowd. The starting of an airship is always the critical point in its flight, and once clear of the starting place with such a trim little craft as the Arrow one need never fear.

We couldn't have had a better day for the flight of the Arrow if we had ordered it in advance. It was perfect, and the Arrow seemed to recognize it, for she cleaved the atmosphere like a knife. I'll take back most of what I said about the motor on my first flight, for she chugged away from start to finish without a hitch, and was good for hours more when I came down.

It would be hard to tell you what are a fellow's sensations when he is thousands of feet in the air riding such a little racer as

the Arrow. The only way I can describe mine is to say that I was full of pure gladness to be away up scudding like the arrow that the little ship is. When a fellow reaches a height where the cheers of the crowd below are no longer heard and all above and below and around him are the vastness and silence of the infinite, he feels as he never has felt or could feel on land or sea. I guess, without meaning to pun, it is a feeling of pure exaltation, and that is about as near as it can be described to one who has never made the trip.

I don't know exactly what manoeuvres I made in the air. Baldwin says he figures I must have made at least a hundred, and I guess that is about right, for I turned her here and there at will and without any particular object at times, except to show that she was under perfect control.

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I know that I went over to the Ferris Wheel and scudded beyond it and over the Boer War. I could see the troops there, but could not hear a single shot in the battle. I could absolutely take any course I chose to when I did not shift my own weight about on the frame, and I soon learned not to shift it. Twice when I stopped to fix the engine the machine wobbled some and got out of her course, but I had no trouble in getting her back again. Just as long as I gave her her own headway she shot through the air like an arrow.

I could have taken her up again after landing just as easily as I did the first time. During all the cruise I did not have to let out any of the ballast, except what I let out at the start.

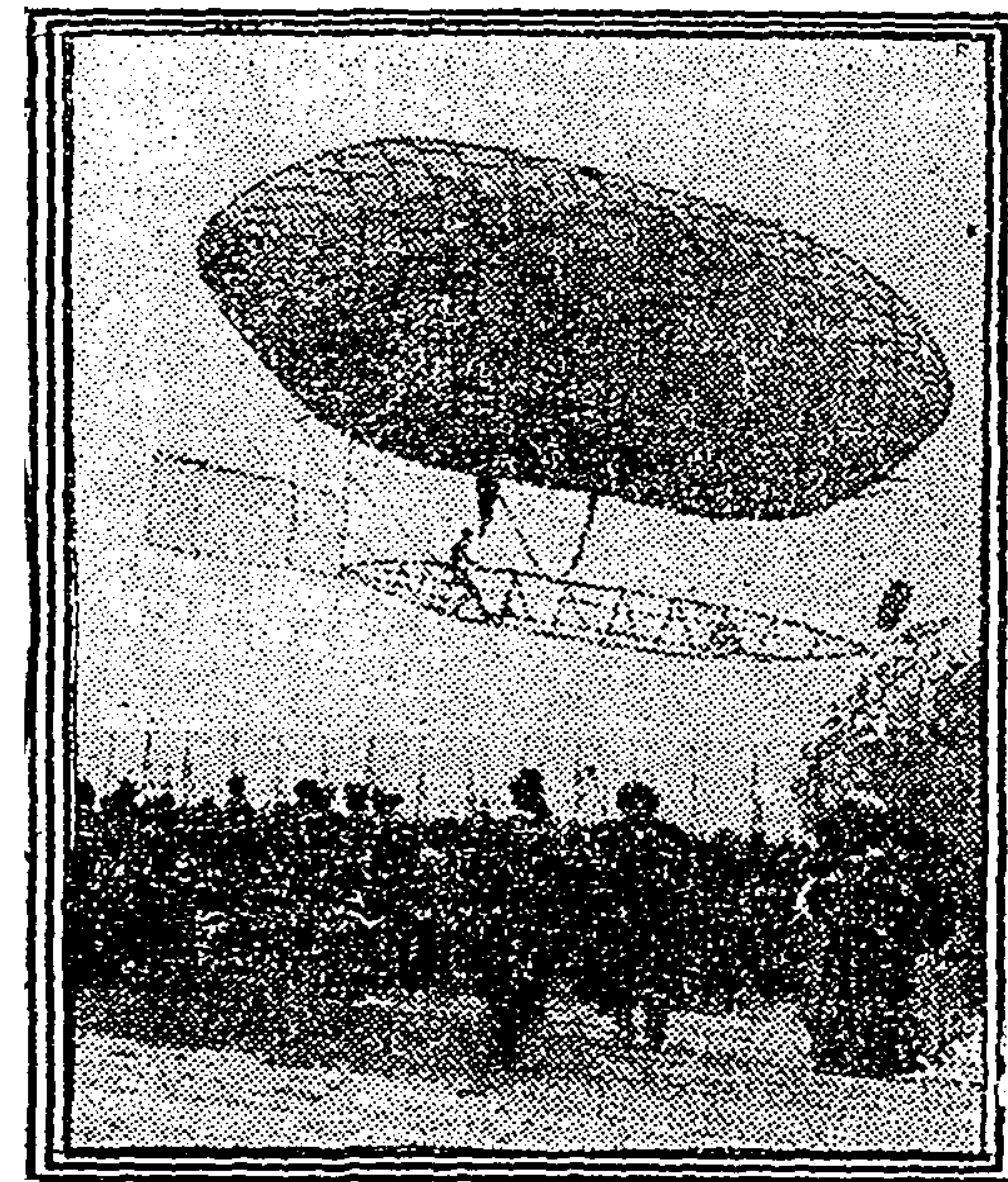
Sailing an airship is great sport. I cannot doubt that it beats any kind of navigation there is for pleasure, and I look for the practical demonstration of the dirigibility of airships afforded by Baldwin's ship to give it a great boom in this country.

HOW A RETAILER CATERS TO THE BETTING HABIT.

A WELL-KNOWN firm of hatters has become as much an election consideration as the candidates of each party. How many times during the course of the day do we hear—"bet you a hat—all right, make it a So-and-so's!" So much so is this the case that the firm referred to find it quite a feature to operate an ingenious method of having the loser settle the bet. They have printed orders for the purpose. This order is in reality a check made out to the individual and is good for one of so-and-so's hats. The loser calls at any one of the firm's hat stores, buys an order to the amount of the hat specified in the betting, and this in turn becomes the same as currency when presented for payment. This solves the problem of having the winner make the selection of the very best hat he would buy were he paying out of his own money.



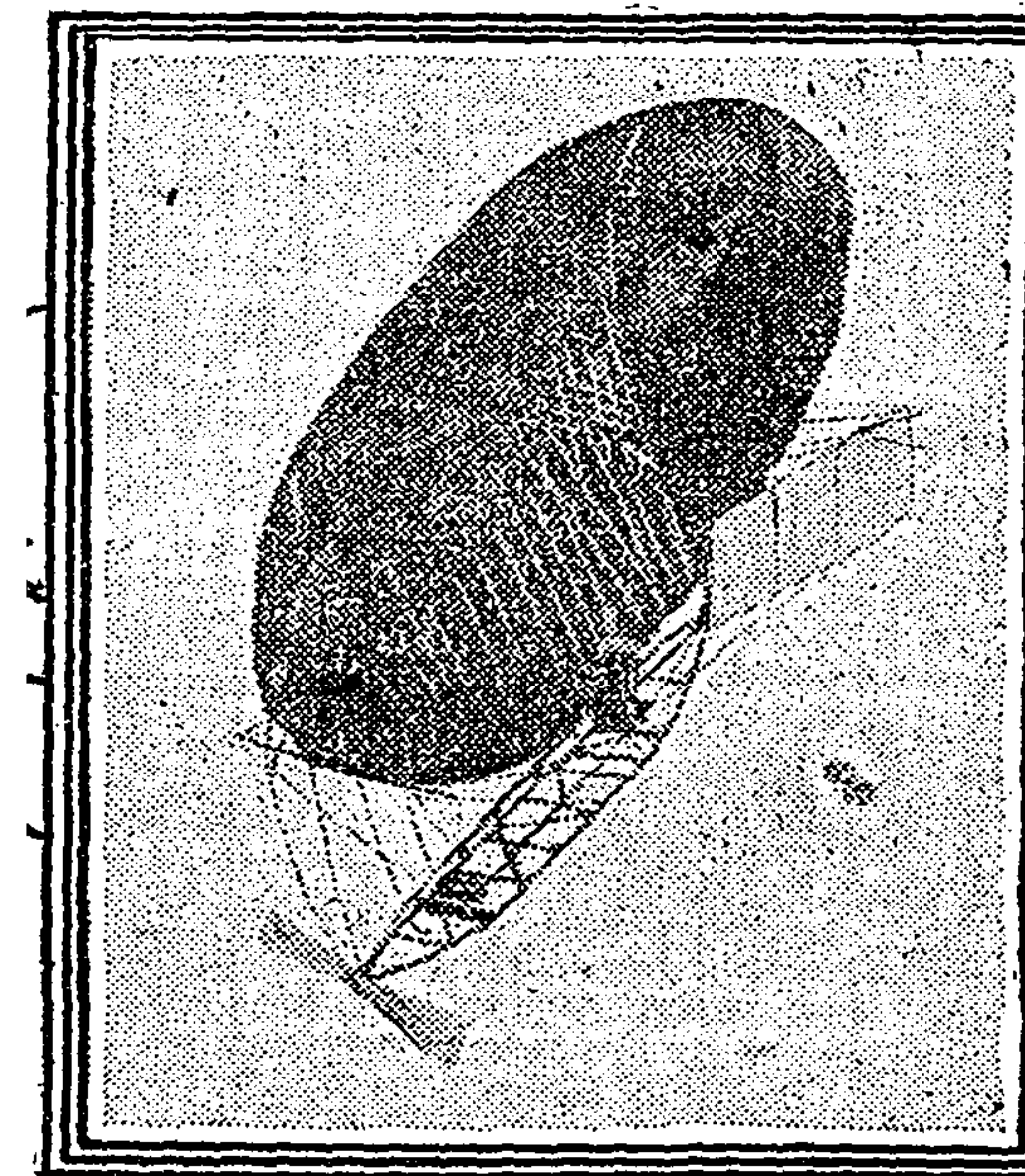
CAPT. T.C. BALDWIN, THE INVENTOR



LEAVING GROUNDS ON TRIAL FLIGHT



FRAMEWORK AND GASOLINE MOTOR



ABOUT TO LAND



A. R. KNABENSHUE, THE PILOT