

OUTDOORS WITH THE SCIENTIST

Tuesday, January 1, 1929.

NOT FOR PUBLICATION

SPEAKING TIME: 10 minutes.

ANNOUNCEMENT: About a month ago, the Weather Man told Station _____'s radio audience about some common weather signs and weather fallacies. It's his turn to talk to you today and we have a tip that he's going to talk about the United States Weather Bureau's new weather service to air-men. His chat comes as this week's OUTDOORS WITH THE SCIENTIST radio feature, prepared by the United States Department of Agriculture.

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My friend and I were down at the flying field, where the earth meets the sky. Waiting for the fast mail plane to fly in from the West. It was then 1:30. The plane was due at 1:40. We had 10 minutes to wait.

Over in the hangars, mechanics in tan overalls were working on the "ships." Some one was whistling "Blue Heaven." The explosive whirr of a powerful engine being tuned up shut out the high notes.

Out on the field, several planes were being put into final trim for their adventurous journeys into the blue. There they stood--- impatient--- their long, blunt snouts pointing off into the air. They seemed nervous--- eager to be off. High in the air above us we heard the insistent drone of a couple of planes: sweeping through the clouds as if playing "hide and seek." Suddenly, on our left, there broke out a heavy, stuttering roar. Another big, grey ship was ready to go. Its propellor whirred in a steel-blue circle. Now the machine is off. Gathering speed, it skips across the frozen ground. Now and then it takes light, graceful leaps into the air. It ^{is} glides up at an angle--- and doesn't come down. Another 5 minutes and it'll/only a vague, white "T" in the sky--- noxing off into the West horizon.

My friend turned to me. "Craig made a pretty take-off, didn't he?" I nodded. "He should ^{reach} Metropolis by sundown--- if a storm doesn't come up and force him down, as it did last time," my friend added.

"He'll find it fair all the way, Jimmy," I said. "No storms today."

Jimmy was surprised. "How do you know?" he asked. "It's 500 miles to Metropolis. Craig might run into a cloud bank or a blizzard 200 miles out."

"Not today," said I. "At least, the chances are 10 to 1 he won't."

"Sure--- it's fair HERE, all right," said Jimmy. "But how in Sam Hill can you tell what the weather's like in Metropolis? And in all the 500 miles between here and Metropolis?"

And that got us started talking. We still had about 7 minutes before the mail plane was due. So we found a couple of boxes and sat down. I was wondering, while we talked, if all the people who received those Christmas greetings marked AIR MAIL thought about the story of thrills and danger that lay behind them..... I spoke of that to Jimmy.

"Have you ever stopped to think what it means to get a letter stamped AIR MAIL?" I said. "For that 5-cent stamp, you buy courage and service. Believe me, it takes nerve and skill to carry the mail through the air. Nerve as great as the boys who carried the mail on ponies through Indian country in the old Pony Express days, had! On a day like this--- bright sunshine, a blue sky overhead, it's nice going. But it's the blizzards, high winds, storms, fog--- that try the aviator's mettle. But the mail must go, fair weather or foul. Many of Uncle Sam's POSTMEN OF THE AIR fly through the inky blackness of night and often under the most hazardous and unpleasant weather.

"On all the many air mail routes," I went on, "pilots pay the closest attention to what they and the weather men call VISIBILITY and to what is called the CEILING, that is, the highest altitude before they reach the clouds. Take Craig, who just took off. He knew what the weather's like around here just as well as you do, Jimmy. Looked pretty confident, didn't he? Well, the weather reports he got this morning before he took off, helped to make him confident. They told him that the visibility is good today, that there'll be practically no cloud hazard, and that only a slight wind is blowing. Air pilots pay special heed to the height of low clouds. They're interested in wind velocity, also, both on the surface and in the upper layers of the air. They don't pay much attention to rainfall--- unless the clouds are low and heavy. Snow fall is of much importance to airmen because it may increase the load of the plane and cause accidents. Of course, the aviator taking a short hop isn't so particular about weather conditions. But when a chap's taking off on a long cross-country flight, he wants to know as much as possible about weather conditions all along the "road." Sometimes it means life or death to him."

Jimmy broke in. "As you say," he said, "it's easy enough to see what the weather's like here. But how do you know what it's like 1,000 or 5,000 feet in the air? Or between here and a city 500 or 600 miles away? That's what I'd want to know if I were flying with valuable mail."

"Naturally," I replied. "And that's just where the Weather Bureau's new meteorological service for commercial aviation steps in. About 2 years ago, Congress passed what is known as THE AIR COMMERCE ACT OF 1926. The purpose of this Act is 'to encourage and regulate the use of aircraft in commerce.' The service is new and not completely in operation even yet. But already it's giving weather reports, forecasts, warnings, and advices

of great value in 'promoting the safety and efficiency of the air navigation in the United States and above the high seas,' as the wording of the Act goes."

Then I gave Jimmy a few figures. I told him that the Airways Division of the Department of Commerce reports that there are now about 14 thousand miles of air mail routes in operation in the United States. About 8 thousand miles of these airways are lighted with beacons for use in night flying. It is proposed to have 22 hundred more miles lighted by July 1, 1929. And before long the total mileage of mail airways will be increased by 6 thousand more miles which will extend the mail routes clear down to the Canal Zone.

"Now, the work of the Weather Bureau in this aviation service," I went on, "really consists of observing, measuring, and investigating conditions of the atmosphere--- advising upon the suitability of proposed air routes as regards their weather conditions--- and establishing and operating weather offices and stations."

"That's a bit too highbrow for me," said Jimmy.

"Well, in other words, Jimmy," I explained, "a lot has been said about what should be done to protect the airways and aircraft. This new Weather Bureau service gets down to business and actually does things. For example, it makes daily reports of the condition of both the surface and upper air. It makes short-range forecasts giving the outlook for from 1 to 5 or 6 hours in advance. The length of the period naturally depends on how long the flight is going to last. And then the Bureau forecasts the weather for the next 12 to 24 hours. There are about 40 stations in the United States that make daily observations of UPPER AIR conditions. These are made with the aid of BALLOONS and other equipment and are especially valuable to aviators. In addition, the regular weather offices throughout the country--- more than 200 of them--- make daily observations and records of the SURFACE weather conditions. These are also used by airmen. A number of both kinds of weather stations are located on established air routes. All of these stations make at least two observations a day. Some of them make hourly observations both night and day."

"What do you mean by OBSERVATION?" Jimmy wanted to know.

"We mean simply an investigation or a study of the condition of the air--- the weather, really," I said. "The weather observers measure the speed and direction of the wind--- the temperature--- the rainfall or snowfall--- the kind and height of clouds in the sky--- the visibility, (or how far and how well you can see)--- the fog, haze, or smoke in the air--- thunderstorms--- squalls--- blizzards--- vapor, etc. These conditions are noted at about the same time each day--- generally early in the morning--- by all the stations. Each station then telegraphs the conditions to other stations. All this information shown on weather maps makes

it possible for an air pilot to read at a glance the air conditions he is apt to meet on his flight, no matter whether it's a long or a short one. It gives him a bird's-eye view of the air and weather--- see? As I said before, most of the stations make these observations twice a day. And our friend, Craig, studied those maps and weather reports before he took off today."

"I'm beginning to see through it," said Jimmy. "But can these forecasts be trusted?"

"Well, you can always depend on the fact that they are made on the basis of the best knowledge and experience of expert weather men," I said. "On the whole, weather forecasts made by Bureau offices are about 80 to 90 per cent verified. The Bureau's responsibility is over when it makes the best observations it can and then releases them to the public on time. The air pilots get their weather observations in the morning-- around 9 o'clock, say. Well, it's not the Weather Bureau's duty as weather observers to advise a pilot whether he should fly or not on a particular day. But it IS our duty as trained weather observers to let a pilot know what the air conditions will be here and in the place where that pilot is going."

"That's a fair-size assignment in itself," said Jimmy.

"Right," said I. "But here comes our mail plane. I'd know that plane's song in a thousand. Guess I'll have to finish telling you how we make all those observations some other time. There's a lot more to say."

And then we went down to meet the pilot of the big plane as he landed. He said that everything was rosy all the way along but that it was pretty cold up there.

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ANNOUNCEMENT: That concludes the OUTDOORS WITH THE SCIENTIST chat for today. Uncle Sam will broadcast another one through Station _____ next Tuesday. There'll be another weather-man chat before long, too.

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National Oceanic and Atmospheric Administration

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July 23, 2010