

CHATS WITH THE WEATHER MAN.

Friday, November 14, 1930.

ANNOUNCEMENT: And now for another chat with the weather man. Our old Ob. Server, has been talking with the Chief of the climatological division of the United States Weather Bureau, about some of the recent work on winds in the West Indies. ----- Tell us about what has been discovered, Mr. Ob. Server?

For nearly ten years now, the United States Weather Bureau has been exploring the heights and depths of the famous northeast trade wind.

Those are the remarkably steady winds which did so much to put America on the map, by boosting Columbus and other early Spanish explorers on their way to the New World. Now they are being used to aid air travelers on their way.

These trade winds in the tropics make our West Indies a delightful place to live throughout the year.

Dr. Oliver L. Fassig, chief of the climatological division of the United States Weather Bureau, says few people seem to realize how important winds are in making climate. They speak of temperature as being the whole thing. What really counts is the combination of temperature, and moisture, and wind movement.

Very high temperature with very dry air can be very healthful and comfortable, as is our own Southwest.

Where you have a high temperature with very moist air and only a slight wind movement, you have a disagreeable, unhealthy climate. But you can have a combination of high temperature, and high humidity, with decided wind movement, resulting in a pleasant, comfortable climate in spite of the heat and humidity. That is what you get in the West Indies. Our West Indies lie entirely within that belt of strong steady winds from the East which encircle the globe from eight to ten degrees to about twenty to twenty-five degrees North latitude. There is a similar belt about the same position South of the equator. Continental land masses break up those winds more or less. They are best developed over the oceans. Because they were strong and steady they were big helps to early trading vessels, and have been known for centuries as trade winds.

But the ships sail at the bottom of those big currents of air. What's upstairs in the trade winds? Above the trade winds, the winds

blow from the West. How high do the trade winds go? Where are they strongest? In these days, when airplanes travel through the trade winds instead of at the bottom of them as do ships, those are highly practical questions. The aviators want to know where they can find winds to best boost them on their way.

Weather scientists the world over also want to know more about the trade winds and the part they play in the general circulation of the atmosphere of the world.

For that reason, the United States Weather Bureau started to explore the trade winds by means of small rubber balloons released every day from the station at San Juan, Porto Rico. Dr. Fassig, who had charge of that work, says that as a result of these soundings of the heights of the trade winds, discoveries have been made which prove these winds are vastly different from the accepted ideas pictured in the text-books.

The well-known system of making the soundings by pilot balloons is comparatively simple. The balloons are filled with hydrogen gas until they attain a given free lift. When released, they rise at a uniform rate per minute, so long as there are no leaks in the balloons. The length of time a balloon is in the air gives its height at any moment. The position of these little balloons is noted at the end of each minute by means of a telescopic instrument for determining the angle of change from one minute to the next. By triangulation, the velocity and direction of the winds can be very accurately determined to great elevations.

The balloons may be lost in the clouds in a few moments, but ordinarily, there is so much bright weather in the tropics that our experts have been able to get records of the wind movement up to fifteen to twenty thousand feet as an average throughout the season.

In fact, Dr. Fassig showed me a chart he had made picturing the heights reached by some of the balloons above San Juan, together with the world's records. At favorable times, the balloons have been watched for over two hours before they were lost or disappeared in a cloud, at heights of fifty to sixty thousand feet, some ten to twelve miles up, and far beyond the highest ever reached in airplane or manned balloon.

From soundings made in this way, it has now been found, Dr. Fassig tells me, that the depth and direction of the trade-winds vary at different seasons of the year, and from day to day. The trade winds do not have that uniform flow and depth formerly thought. There are big changes from day to day, and even hour to hour.

Usually, Dr. Fassig found, the trade winds are shallowest in the month of May, when they average about three miles deep; and are deepest in the month of August when they are five miles deep. That is the average. The cross-section chart of the trade winds day by day prepared by Dr. Fassig shows some days that the great west wind movement from above the trades even dips down to the surface of the ground. But usually those winds from the West don't stay at the surface more than a few hours or at most a day.

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The trade winds themselves may vary from a few hundred feet deep one day to six to eight miles deep the next.

These daily observations of the speed and direction of the winds at different heights are forwarded to all flying fields along the airplane routes of the West Indies, so the pilots can pick the best level to fly.

Of course, the air travel is largely in the lower levels of the trade wind observations. The force of the wind increases steadily from the surface up to about two thousand feet and then begins a steady decrease, but information about the variations from such average conditions is often highly important to flyers in the tropics.

At the surface, however, the strength and constancy of the proverbially inconstant winds insures pleasant weather in the West Indies throughout the year, and provides a potential source of power to drive wind-mills for pumping and other operations which is even yet not fully recognized, Dr. Fassig says.

ANNOUNCEMENT: As the Psalmist would say; "Yea, he did fly upon the wings of the wind." Two weeks from today, old Ob Server will be back with another breezy chat with the weather man of the United States Weather Bureau.

National Oceanic and Atmospheric Administration

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