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UNITED STATES  
DEPARTMENT  
OF AGRICULTURE

**Radio  
Service**

OFFICE OF  
INFORMATION

CHATS WITH THE WEATHER MAN.

RELEASE Friday, September 19, 1930.

ANNOUNCEMENT: If there ever was a year when the weather was more cussed and discussed, we don't recall when it was. Our old friend, Ob. Server has done his part. But he gets his weather talk direct from headquarters of the United States Weather Bureau---and those experts generally know their weather. Here he is now. Well, Mr. Ob. Server, tell us about your latest chat with the weather man-----

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Friends, between hurricanes and droughts, we seem to have had some weather this summer. Every time we've picked up a newspaper, more weather has been breaking into big print. One day it is a scientific discussion of the possibilities of long range weather forecasting. Another it is the superb flight of weather-wise French aviators west across the Big Pond. Still another, it is unusually mild weather in the Arctic which reveals the bitter fate of the long-lost Andree and his polar balloon party.

What would you say to this? That the discovery of Andree, due to less snow and ice in the Arctic this summer, may be linked with conditions in the tropic seas four years ago when a series of bad West Indian hurricanes devastated Miami, Havana, and Nassau in a single season. The idea seems absurd; until you find out that during that big hurricane year the waters of the Atlantic equatorial currents, which feed the Gulf Stream, were a little warmer than usual and continued so during the following two years. Those waters sweep north through the Atlantic carrying warmth with them. That big current spreads out and slows up. Its temperature affects the pressure and cyclonic activity over northern reaches of the Atlantic, where that ocean merges with Arctic waters. True, meteorologists have shown that the extra warmth of tropical waters should be almost entirely lost within a year, or about the time it would take them to flow from equatorial to Arctic regions. But this extra warmth must add to the general store of warmth in the Arctic.

Of course, at present this is just a plausible suggestion. While we know a good deal about weather, there are a lot of things yet to be learned about the atmospheric engine which makes the weather. We know, for example, the processes that cause rain, but we don't know why they should cease for a long time in certain areas and result in a drought. Maybe conditions out in the ocean play a big part. Mr. F. G. Tingley, chief of the marine division of the United States Weather Bureau, seems to think so.

And, by the way, Mr. Tingley says that when all the records are in, we'll probably find that there was just about a normal amount of rainfall this year, taking the earth as a whole. We didn't get enough, but France and Belgium and western Europe generally had too much rain. In the Argentine, they had to delay corn shipments to Europe until they could dry the corn. Even our own Western States had more rain than usual.

Of course, the seas being his province, you might expect him to take a world-wide view of things. And his division being engaged in studying winds and water temperatures at sea, grouping to find just what influence the ocean does have on our weather, it is not strange he sees weather from the ocean viewpoint.

By measuring the run-off compared with the amount of rain that falls, we know that about one-third our rainfall finds its way back to the sea. So one-third must come from the sea. As Mr. Tingley says, if we didn't get moisture from the ocean, if that third of our water supply was cut off, we would be in a bad way.

But there is more in sea weather than mere water. The ocean covers two-thirds of the surface of this old globe of ours. The upper layers of those vast stretches of water store up a lot of heat. Not only that, but there is a mixture of warm and cold water going on by means of big currents which sweep from warm regions to cold and from cold to warm. The biggest and best known of the warm currents are the Gulf Stream and the Japanese Current. The Labrador current and the Humboldt Current, along the west coast of South America, are the chief cold currents. That interchange of warm and cold water helps to even up things between the warm and cold regions.

We all learned that in our geography at school. But Mr. Tingley tells me that there is a slight difference between the temperature of the ocean waters from time to time. There are changes from year to year. The waters at the same point in the Gulf Stream, for instance, get warmer or cooler than usual some years. That may be due to a difference in the amount of floating ice from the south polar regions months before; or it may be due to actual differences in the heat received from the tropical sun. We just don't know yet.

If these changes only affected the sea, most of us might not have to feel concerned about them. But the water affects the temperature of the air over it. The temperature may modify pressure and thereby change the direction and force of the winds over the sea. That in turn may influence the distribution of pressure, temperature and precipitation over the land.

Some claim from knowledge of the temperature of sea water they may be able to forecast certain land weather far in advance of its actual happening.

Anyway, this question of sea temperatures is considered so important that, Mr. Tingley tells me, his division plans a more intensive study of the thousands of measurements already on hand in hopes of finding further clues to the ways of weather on land, and sea.

These records include a large number of temperature and wind measurements made by ships plying the waters of the Caribbean Sea and crossing the Gulf Stream. Most of those measurements of sea temperature are made by simply throwing a canvas bucket over the side of the ship and dipping up a bucket of water and sticking a thermometer in it. The velocity of the wind is measured at the same time, as the depth of mixing of the warm surface water with the cooler water beneath it depends on the wind. The velocity of the wind is taken as an index to the depth of the mixing.

In order to get a better check on the temperature records taken that way, the American Meteorological Society in cooperation with the Weather Bureau recently installed an automatic recording thermometer on a Key-West-to-Havana car ferry boat which crosses the Gulf Stream. The bulb of the thermometer is built to fit in the pipe where the ship takes in water for its condensers. The temperatures are recorded continuously by an automatic pen which traces a jagged line corresponding to the changes in the temperature of the water. When the ship strikes the warmer water of the Gulf Stream the line goes up sharply. When the ship passes out of the Gulf Stream the line on the paper drops down again. One little strip of paper shows the exact record of changes in temperature during one week's trips. Similar instruments have been installed on other ships crossing the Gulf Stream at different points in its course.

More recording devices together with the usual bucket observations will give our weather scientists much information about the minute vagaries of temperature which may mean much to those of us far from them.

It doesn't seem impossible that some of the secrets behind our great inland drought may be literally dipped up from the sea in a canvas bucket.

Anyway, the scientists of the marine division of the United States Weather Bureau are trolling for facts about our complex land-and-sea weather problems.

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ANNOUNCEMENT: We hope you enjoyed your refreshing dip in the sea. They say it is always fair weather when good fellows get together? It certainly seems to always be interesting weather, when the weather experts get together. Old Ob. Server will bring us another chat from the weather man two weeks from today.

# **National Oceanic and Atmospheric Administration**

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July 23, 2010