

CHATS WITH THE WEATHER MAN.

Friday, Oct. 3, 1930.

ANNOUNCEMENT: Every other Friday, our old friend Ob. Server, chats with us about his chats with the weather experts at the United States Weather Bureau. He was at the Bureau when the recent drought was declared broken. After such a long dry spell as we had this summer, that was what you might call a "historic moment." ----- Tell us about it, Mr. Observer.

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"The drought is definitely 'busted'!"

Mr. C. L. Mitchell, principal weather forecaster at the United States Weather Bureau, said just that. He said it confidently, and with his best 'I-told-you-so' smile.

There before him was a map of the United States with the latest rainfall reports from stations over the country charted on it. One glance at that chart showed heavy, sod-soaking rains of the past twenty-four hours well scattered through the dry regions, just as Mr. Mitchell had predicted there would be several days before.

But one of the other Weather Bureau men standing by shook his head. He had just come from a trip into the nearby country, still dry, parched, and waiting for water. He protested that the drought was still here.

Then Mr. Mitchell opened the bigger forecast map lined and circled with its "highs" and "lows". To a weather-wise man, it was a refreshing sight. Instead of the puzzling stagnation of air which had confronted the forecaster for weeks, there was a picture of more normal weather conditions comparatively easy for the trained meteorologist to interpret. Mr. Mitchell did not hesitate to point out the probability of more refreshing rains within the next twenty-four hours in many of the remaining dry sections. And, I noticed, we got them.

As he put it, rainfall acts as a sort of "revolving fund" for farm relief. Once the land gets well saturated with water, the revolving fund is established. That rain makes for more rain. The sun comes out. There is a lot of evaporation. A large percentage of that rainfall gets back into the air. The warm air filled with invisible moisture rises. Along comes a body of cool air. That cool air comes as a wedge seeking the lower levels because it is heavy air. The warm air and the cool air meet. The warm air rises over the wedge of cool air. Cooling the moisture in the warm air becomes visible as clouds. The moisture particles in the clouds become bigger and bigger and fall again as rain.

That in a very rough general way is what happens when it rains. As Mr.

Mitchell points out, there are three things we have to have to get rain. We have to have warm air movement. We have to have cool air movement. And we have to have moisture.

Warm, moist air is not enough. Cool, moist air is not enough. We must have warm air, cool air, and moist air. The Caribbean Sea and Gulf of Mexico are a great reservoir of moisture for our country. Warm air filled with moisture sweeps north into the United States. But unless that warm air meets with cool air it dries out and produces no rain. Ordinarily huge masses of cool air from the northern Pacific and Canadian northwest move down in great wedges, which force the warm moist air to slide up over them where the moisture cools and condenses into clouds and then falls as rain.

This past July and August, however, there was a great lack of masses of cool air from the North. As the drought became more and more widespread, the forecasters had to depend more and more on the big general movements of air over the continent in making their predictions.

But when the reports of the barometric pressure, and the speed and direction of the wind, and the temperature taken at the hundreds of Weather Bureau stations were plotted on the map of North America and when the stations of the same pressure in the different regions were connected up with lines, as you have seen them on a weather map, the usual signs of rain were lacking. The big areas of high pressure, associated with cool winds from the North, were either lacking or were blocked off from movement down to us by other pressure conditions. There was a sort of traffic jam which kept our rain-making supply of cool air from getting through.

And right here, let me say, that there is nothing that smacks of the work of the goose-bone prophets in the predictions made by forecasters of the United States Weather Bureau. Of course, the correct interpretation of which way the traffic of great "high pressure" and "low pressure" air masses will move takes sound judgement and a vast deal of experience and study of what has happened under similar conditions in the past. The forecaster is able to judge what will be by knowing what is. He is able to say what's coming, largely because radio and telegraph messages from his observers in the field travel faster than the wind. At the same time each day, observers at stations scattered throughout the United States, and in Alaska, Canada, Greenland, and Iceland, report the temperature, and pressure, and wind movement at their stations. The Canadian government supplies the reports from northern Canada by radio, and the Danish government those from Greenland and Iceland. Our observers in Alaska get up at two o'clock in the morning to make their instrument readings; so that our forecaster's daily picture of weather conditions will not only be practically complete but perfectly in focus in point of time.

A few years ago, Mr. Mitchell tells me, it would have been impossible for anyone to have accurately forecast the break in the drought as far ahead as he did. Until recently, our weather forecaster's map ended a little beyond our northern border. Now, however, through extension of our own service in Alaska, and through the cooperation of the Canadian and Danish governments, we get a broad general picture of the weather up to the Arctic. The Canadian government recently began supplying us additional reports from some of the re-

maintaining blind spots on the weather map. The first reports from one of those stations came in just in time to enable Mr. Mitchell to trace the movement of cool air which helped break the drought. These northern stations have given us from one to two days bigger jump on wind movement from the North.

Not only that, but our forecasters have added a third dimension to their range of observation. Knowledge of wind movement aloft is highly important in interpreting conditions at the surface. Pilot balloon observations of air movements at different levels are now being taken at a large number of points scattered along our airways. In addition, a complete record of temperature, pressure, and air movement from the surface up to several thousand feet is now being made every day by means of airplane flights at Pensacola, Florida, Norfolk, Virginia, and Washington, D. C. The maps of upper-air conditions, as well as our ever widening surface weather map, are considered by the forecaster in deciding what the complexities of weather hold in prospect for us. All his work is based on conditions as recorded by accurate weather measuring instruments. He does not predict "sight unseen."

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ANNOUNCEMENT: Our old Ob. Server gives us another of these chats with one of the weather men of the United States Weather Bureau two weeks from today. Station _____ presents this program in cooperation with the United States Department of Agriculture.

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National Oceanic and Atmospheric Administration

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