

CHATS WITH THE WEATHER MAN

Friday, March 21, 1930

ANNOUNCEMENT: The weather, like the poor, we always have with us. But we don't always have a chance to sit down and hear a chat from the weather man as to the inner workings of the United States Weather Bureau. It is only every other Friday we get that. But today is the day, and our old friend, Ob. Server is here to give us a glimpse into the flood warning service of our government—Go ahead, Mr. Ob. Server—

Radio is a big boon to many folks living in the lowlands along our rivers. Mr. Montrose W. Hayes, chief of the river and flood division of the United States Weather Bureau, tells me that flood warnings broadcast by radio now reach many people who used to be cut off from communication in some of the most dangerous spots along our river bottoms.

Of course, flood forecasts are spread widely. They go out from Weather Bureau offices by telegraph and telephone. They are published by newspapers and carried by mail. But until radio broadcasting came along, there were many overflow sections which were not reached by wire or even by mail with sufficient speed to help much. They were practically cut off from the information most vital to them. Nowadays, however, the radio set enables folks in isolated sections to get this life-saving, property-protecting information as promptly as anybody.

In some valleys, homes, stores, barns, and warehouses are subject to overflow. This wonderful warning service gives the valley dwellers a chance to get themselves and their goods to safety. In other places, there is nothing much but livestock in the river bottoms. But the warnings enable owners to drive out the stock, instead of leaving them as they used to do to take refuge on high land which might be surrounded by water and finally submerged and the stock drowned.

And, of course, where there are levees. These flood forecasts are used by the levee officials in directing the patrolling and sand-bagging of the levees. Power companies also use them in manipulating their water gates. In fact, there are a thousand uses. They are used in the protection of bridges. Forces of men are placed in readiness to clear away the drift which banks up against the bridge when the forecast shows flood conditions which will bring that menace. In large towns along the rivers, these flood warnings serve as indicators when to close sewers to prevent back-water flooding through the sewers and spreading disease. They show when goods need to be moved from warehouses.

These flood forecasts for the lower reaches of the big rivers are often highly accurate. An error of as much as one foot, in predicting the height of the flood, Mr. Hayes tells me, is considered quite a big miss. The forecasters are generally able to predict within three or four inches of the exact level the water will reach.

That, of course, varies with the stream. Every river and every river system is somewhat of a law unto itself. The length of time warnings can be issued before hand and the accuracy of forecasts depends on the kind of river. On the more flashy streams, running through hilly country, floods will reach a given point within 24 hours after the rains which cause them. As a rule, the larger the stream and the less the slope, the longer ahead of time warnings can be given. In the middle Mississippi Valley, forecasts in a general way can be made a week in advance of the flood. The length of time increases as we go down the river. At New Orleans, warnings can be given a month in advance.

The accuracy of the warnings also depends on the size of the stream. For the smaller, hill country stream, warnings are made in very general terms, such as: "slight flood," or "moderate flood" or "very high flood". On the larger streams, the forecasts are expressed in more definite figures. On some streams it is possible to make an accurate forecast of the crest of the flood within a foot, while on others the forecast can be so refined that they will not vary more than two to three-tenths of a foot from the actual level reached by the water.

In very big floods on streams which have levees, however, the flood forecasts may be thrown off by breaks in a levee which may let the water flow over a vast territory. But barring such accidents, a surprisingly close estimate is made many hours in advance.

That is, it is surprising until you understand the vast system of report-gathering upon which these forecasts are based. This entire country, Mr. Hayes explains, is divided into 64 river and flood districts. Each district has a central station which gets weather reports not only for that entire district, but from other districts in a considerable area around that.

Along the rivers in these 64 districts there are some 750 river gages of one type or another spaced twenty-four hours apart by water travel. These gages show the elevation of the surface of the water in the river at that point. At the river gage stations on some of the smaller streams, the stage readings from these gages are made only when the river is rising fast or when there have been heavy rains which may produce a rise. At most of the stations on rivers throughout the country, however, readings are made every day at 8 o'clock in the morning and are telegraphed to the district center. Those not located at regular weather bureau stations are read by a local man who is given a nominal sum for each reading.

Besides these reports of the height of the water in the rivers at various points along their courses, each river and flood district center gets the regular weather reports from over two hundred stations scattered throughout the United States. In addition, the district center gets a large number of special rainfall reports from rainfall stations located at strategic points on the various watersheds.

The daily weather reports, river stage reports, and rainfall over the area are charted and used in a mathematical formula based on past

records to predict what level of water will be produced by those weather conditions.

In this work, Mr. Hayes tells me, a separate formula has been worked out for each river based on what levels certain amounts of rainfall at certain stages of the river under certain conditions of run-off have produced in the past.

The chief data are obtained from the current daily reports, but the forecaster must also take into consideration the seasonal rainfall and the amount of rainfall in the ground. For instance, as Mr. Hayes pointed out, a sudden thaw in the spring may release water frozen in the ground after heavy rains the previous fall.

From his knowledge of such long-time factors, the flood forecaster can often get a good general idea of the likelihood of the river getting out of its banks long before the event.

For instance, Mr. Hayes says that conditions now indicate that a big flood on the lower Mississippi is very unlikely this year. Of course, that is, barring unusual rainfall. However, the observers and forecasters of the river and flood division keep a constant check. Engineers working on our rivers and boats plying up and down them or even tied up at the bank are interested in even small variations in the depth of the water. The river and flood service is always on the job ready to give prompt warning by radio of any menaces by flood.

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ANNOUNCEMENT: Old Ob Server will be back with us two weeks from today to give us further results of his chats with the weather men at the United States Weather Bureau. These chats are presented by this Station--- in its program of cooperation with the United States Department of Agriculture of which the Weather Bureau is a part.

National Oceanic and Atmospheric Administration

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