

CHATS WITH THE WEATHER MAN

RELEASE Friday, August 21, 1931.

ANNOUNCEMENT: Old Ob. Server is going to give us another of his chats with the weather experts of the United States Weather Bureau.-- Well, Mr. Ob. Server, I guess we've had enough dry and hot --- As far as we are concerned, we'll take ours damp and cool ---- What do you say?

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Here in the middle of dog days, we generally think of rivers and streams being at their lowest.

But Mr. W. J. Moxom, of the river and flood division of the United States Weather Bureau, tells me that the lowest readings ever recorded on some of our river gauges were in winter ----

That's another pet idea about August gone smash -- gone smash on the ice! It is a cooling thought all right, but I didn't give up without a struggle. I asked him how he figured.

He explained that ice gorges up river from the gauge dammed back the water, and caused the water to reach its lowest recorded level at several places he had in mind, in winter months.

Mr. Moxom knows what he is talking about, because he is the man who you might say, is responsible for measuring the level of our rivers. That is, he looks after the placing, and checking, and repairing of the gauges at our 700 river gauge stations, scattered along the chief river systems of this great country.

Of course, the level of the water in some of those rivers stays pretty low at this season of the year and so it is often a busy season for the men who locate, and place, and repair the measuring devices.

From what Mr. Moxom tells me, it is very important to get the low-down on rivers. For instance, when a hydro-electric survey is being made with a view to using the water power for electricity, the engineers must know how much water they can count on, and especially must they know the lowest stage and the highest stage of the river.

But that is not Mr. Moxom's chief interest in the low water mark. When his engineers locate a river gauge, they aim to place the zero at low water; the lowest water known or a little below, so there will be no need of bothering with negative or minus figures in making calculations of river levels. Sometimes, in locating a gauge in a new locality, the best available information of where the water comes in the slack water season is not good enough.

For instance, Mr. Moxom was telling me of a gauge on which the zero was found to be far above the lowest low water on that stream during the extreme drought last year. In that case, the gauge had to be relocated, and then the Weather Bureau statisticians had to go back and correct the records to make the readings on the new location comparable with those which had been taken in past years. That is the reason, they use the utmost care in locating gauges accurately in the first place.

You have probably seen some of these river gauges. They are rather simple looking affairs.

One of the best types is the staff gauge, just a sort of big yard-stick, graduated in feet and tenths of a foot, and bolted to some permanent place, such as against the side of a bridge-pier or other solid construction rising out of the water.

At some places on some streams, where the banks are low and sloping and the bridge piers are on the bank away from the water's edge, a sloping gauge is erected to mark the water level. That is, instead of being a straight up-and-down ruler bolted in position, the gauge is a securely fastened timber or other material which runs up the slope of the bank. In that case, of course, the graduations on the sloping marker are so spaced as to mark the vertical rise of the water, just as does the straight up-and-down staff gauge.

The third type of gage is a chain and weight affair which works from a box attached to railing of bridge, or sometimes the bridge floor. The chain has a copper marker in one of the links accurately placed a certain distance from end of weight. The measuring scale is usually attached to bridge railing, extending from one end of box. The level of the water is determined by lowering the weight through an opening in box until the weight end just touches the surface of water; the gage reading being the point on scale where the marker in chain indicates. In that kind of gage the chain and weight are kept locked in the box and gage readings can only be made by the observer. The chain gauge, Mr. Moxom says is a very accurate gauge permitting the ready reading of differences as small as a hundredth of a foot. However, the pull of the weight on the chain tends to stretch it, so that frequent checking is necessary with that type. Each link in the chain will in the course of a few months, be distorted a very minute amount, but the sum total of the distortion may result in the gauge being two or three tenths of a foot, off if not checked and corrected at frequent intervals.

The ease with which the more simple types of gauge may be read by rivermen and the general public make them the favored kind for most localities.

But even the location of a simple staff gauge is not so simple as it may seem. If the gauge is torn out, by ice or drift wood, or any other way, it is highly important that it be replaced exactly the same level as before.

To make that possible, bench marks or reference points must be established entirely separate from the bridge or other place to which the gauge is affixed. You have probably seen such marks, sometimes in the form of copper bolts, or brass plates, or maybe just a cross cut in the concrete on a street curb or on the foundation of a public building. They are placed at a certain height with reference to the zero point on the river gauge. To relocate a gauge exactly, the surveyor runs his line from that fixed point.

The purpose of all this accuracy, of course, is to enable the forecaster in the district Weather Bureau center to predict the stage of the river, and especially to issue warnings in case of danger of floods.

The river and flood service is organized with its principal headquarters at the central office of the Weather Bureau in Washington, but it maintains about 66 district centers outside of Washington. River-gauge and rainfall stations report to the district centers by telegraph and telephone giving the amount of rainfall and reading of the river gauge. At each river-gauge station there is also usually a rain-gauge to measure the rainfall. There are also a large number of rainfall stations scattered throughout the watersheds of the various rivers. With the reports of the height of the water at points up-stream and reports of rainfall over the watershed, the forecasters are often able to make astonishingly accurate forecasts as to just how high the river will rise at down stream points. To do that, of course, the forecasters must take into consideration not only the river stages and rainfall, but the amount of water in the soil and temperature and seasonal conditions which affect the run-off.

Of course, the forecasters of river conditions sometimes go wrong, as do meteorologists dealing with other phases of our highly-complicated, suddenly changing weather. Mr. Moxom mentioned that on the Illinois River, flood forecasts have been made within one-tenth of a foot of the actual stage a week in advance. And at New Orleans, similar accuracy has been attained 30 days in advance. Just think of it, predicting within two or three inches of the exact height the water would reach a full month ahead.

And think too, when you hear the warnings of floods flashed out by radio, and telephone, and telegraph, and of the lives and property rescued by means of the timely warnings, that back of this sensational service are the patient daily measurements by observers at a thousand river and rainfall stations, and back of those measurements is the constant work of checking, and repairing, and locating the gauges to secure the highest accuracy.

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ANNOUNCEMENT: Thanks, Mr. Ob. Server, for the low-down on high water. This chat with the weather man comes to us from the United States Weather Bureau through the cooperation of Station \_\_\_\_\_ with the United States Department of Agriculture.

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# National Oceanic and Atmospheric Administration

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