TABLE 4.—*Flood stages in the rivers of the Pacific slope, February, 1916.*

River.	Station.	Flood stage.	Above flood stage.		Crest stage.	Date.
			From—	To—		
		Feet.			*Feet.*	
Columbia	Vancouver, Wash	15.0	12	13	15.7	12
Willamette	Eugene, Oreg	10.0	7	9	18.2	7
Do	Albany, Oreg	20.0	8	10	28.0	8
Do	Salem, Oreg	20.0	8	10	26.2	9
Do	Oregon City, Oreg	12.0	8	14	15.0	10
Do	Portland, Oreg	15.0	9	14	20.0	11
Santiam	Jefferson, Oreg	10.0	7	8	14.9	7
Yamhill	McMinnville, Oreg	35.0	10	12	39.1	11
Clackamas	Cazadero, Oreg	8.0	7	8	11.9	7
Sacramento	Red Bluff, Cal	23.0	10	11	24.0	10
San Joaquin	Lathrop, Cal	17.0	7	7	17.0	7

TABLE 5.—*Flood stages in the tributaries of the Ohio, February, 1916.*

River.	Station.	Flood stage.	Above flood stage.		Crest stage.	Date.
			From—	To—		
		Feet.			*Feet.*	
French Broad	Asheville	4.0	3	3	4.0	3
Tennessee	Knoxville, Tenn	12.0	3	4	14.0	3
Monongahela	Fairmont, W. Va	25.0	13	13	25.0	13
Do	Greensboro, Pa	20.0	13	13	23.0	13
Do	Lock No. 4, Pa	31.0	14	14	31.7	14
Little Kanawha	Glenville, W. Va	22.0	13	13	22.5	13
Do	Creston, W. Va	20.0	13	13	20.6	13
Walhonding	Walhonding, Ohio	8.0	1	1	8.0	1
Scioto	Prospect, Ohio	10.0	1	2	10.9	2
Do	Circleville, Ohio	7.0	1	3	11.1	1
Miami	Tadmor, Ohio	12.0	[1] 31	1	14.8	1
Wabash	Bluffton, Ind	12.0	1	2	13.5	1
Do	Logansport, Ind	12.0	[1] 31	2	14.6	1
Do	La Fayette, Ind	11.0	[1] 29	5	23.5	2
Do	Terre Haute, Ind	16.0	[1] 31	8	23.0	2
Do	Mount Carmel, Ill	15.0	[1] 1	17	26.7	7

[1] January.

TABLE 6.—*Flood stages in the Missouri River and tributaries, February, 1916.*

River.	Station.	Flood stage.	Above flood stage.		Crest stage.	Date.
			From—	To—		
		Feet.			*Feet.*	
Missouri	Blair, Nebr	15.0	26	29	16.6	27
Blue	Beatrice, Nebr	16.0	18	18	18.0	18
Grand	Chillicothe, Mo	18.0	20	22	19.8	21
Osage	Bagnell, Mo	28.0	[1] 28	4	32.8	1

[1] January.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

SNOWFALL AT HIGH ALTITUDES, FEBRUARY, 1916.

An exceptionally heavy snow cover in the mountains accumulated during January, 1916. A severe snowstorm during the first few days of February, 1916, added a considerable amount in Oregon, Washington, Idaho, and in Montana, west of the Continental Divide. Subsequent weather, however, was not favorable to the conservation of the snow and by the close of the month much snow had disappeared from the lower levels up to 7,000 feet and on the south slopes. The remaining snow was well packed, and the outlook for irrigation and power water, though not so bright as at the close of the preceding month, was still favorable in practically all localities.—A. J. H.

RELATION OF PRECIPITATION TO STREAM FLOW IN MONTANA.

By R. FRANK YOUNG, Meteorologist.

[Dated: Weather Bureau, Dayton, Ohio, Feb. 14, 1916.]

The region under discussion in this paper is that portion of the northern Rocky Mountains which forms the headwaters basin of the Missouri-Mississippi drainage. It is outlined in figure 1, below.

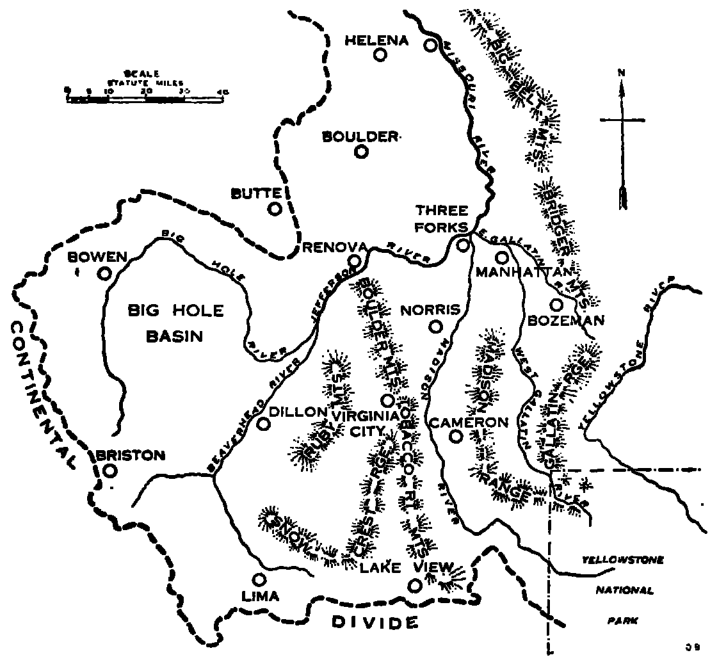

FIGURE 1.—Sketch map of the headwaters of the Missouri in Montana.

Investigations of the water resources in the Rocky Mountains have generally proceeded on the assumption that the most important, if not the only important influence controlling the summer flow of streams is the amount of snow accumulated in the mountains at the close of the snow season. The facts here presented seem to warrant the statement that the question is one of somewhat greater complexity than this view recognizes; but fortunately the greater complexity of the problem does not necessarily add to the difficulty of its solution. The great amount of labor involved in the measurement of the depth of snow over large areas, and the unavoidable inaccuracy of measurements of drifted snow, which may vary in depth from a few inches to 50 feet or more, would probably render this method impracticable for the northern Rocky Mountain region as a whole. Fuller investigation may show that more reliable estimates of the amount of moisture stored in the mountains can be made from careful and well distributed records of precipitation and temperature, supplemented by evaporation measurements, than from any number of measurements of snow on the ground. This applies particularly to the eastern slope of the northern Rockies where the snow, as a rule, is nearly all blown into drifts, and where under normal temperature conditions there is practically no loss except by evaporation during the winter months.