TABLE 2.—*Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a. m. (eastern standard time) during June, 1934*

[Wind from N=360°, E=90°, etc.]

Altitude (meters) m.s.l.	Albuquerque, N. Mex. (1,554 meters)		Atlanta, Ga. (309 meters)		Bismarck, N. Dak. (518 meters)		Brownsville, Tex. (7 meters)		Burlington, Vt. (132 meters)		Cheyenne, Wyo. (1,873 meters)		Chicago, Ill. (192 meters)		Cleveland, Ohio (245 meters)		Dallas, Tex. (154 meters)		Havre, Mont. (762 meters)		Jacksonville, Fla. (14 meters)		Key West, Fla. (11 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	339	1.6	268	1.1	351	1.3	135	1.4	199	1.9	298	2.2	214	0.4	192	1.3	153	2.7	263	0.7	211	0.5	140	2.6
500	----	----	249	2.9	----	----	153	7.5	224	3.5	----	----	237	2.5	218	3.0	200	9.3	----	----	222	5.1	150	5.2
1,000	----	----	254	3.9	315	2.1	157	7.7	290	4.5	----	----	275	5.4	266	5.6	196	9.2	270	1.9	217	4.0	159	4.8
1,500	----	----	261	2.9	294	3.2	160	5.8	295	6.8	----	----	269	6.7	284	6.6	187	6.6	293	3.7	224	2.9	163	4.2
2,000	358	1.6	270	1.3	278	5.0	153	4.7	291	10.3	287	2.1	265	7.2	290	7.9	189	5.2	290	4.8	206	2.6	155	3.8
2,500	295	2.8	298	1.4	282	7.6	136	3.6	298	10.9	256	3.0	275	8.0	296	8.5	175	4.2	271	5.3	189	1.9	160	3.1
3,000	259	3.4	314	1.7	277	8.6	90	3.1	301	10.9	241	5.3	276	7.6	295	7.6	160	2.8	251	6.6	182	1.8	171	2.7
4,000	223	6.8	289	2.3	273	10.8	56	4.1	306	13.2	247	7.1	282	8.4	286	7.6	84	2.4	250	9.0	185	2.2	190	0.7
5,000	230	9.3	294	1.6	268	12.2	32	3.1	----	----	241	9.7	282	10.4	292	7.9	56	3.5	262	11.5	177	0.4	99	1.2

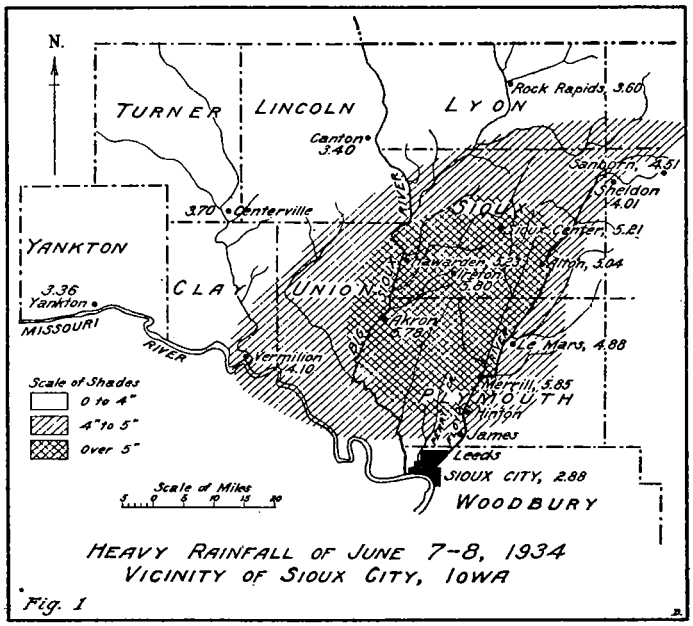
Altitude (meters) m.s.l.	Los Angeles, Calif. 217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (83 meters)		New Orleans, La. (19 meters)		Oakland, Calif. (8 meters)		Oklahoma City, Okla. (402 meters)		Omaha, Nebr. (306 meters)		Phoenix, Ariz. (338 meters)		Salt Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (198 meters)		Seattle, Wash. (14 meters)		Washington, D.C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	165	0.2	303	0.7	180	0.8	202	1.1	259	0.9	167	3.7	144	1.1	99	1.4	158	2.6	35	0.2	129	1.0	262	0.4
500	143	1.5	295	1.4	225	4.8	225	2.4	282	3.1	180	7.0	182	3.2	246	1.1	----	----	352	1.2	40	0.9	272	4.5
1,000	12	0.8	316	1.7	246	3.2	161	2.1	337	5.3	202	13.1	217	7.1	263	2.8	----	----	310	2.9	359	1.5	290	5.9
1,500	332	2.5	350	1.0	271	2.5	154	3.3	338	4.4	209	9.9	230	7.9	234	2.6	169	3.6	293	6.2	343	2.6	286	6.4
2,000	299	2.3	12	1.4	265	1.9	147	3.6	340	2.1	212	7.1	238	7.4	204	2.9	178	3.5	292	7.2	344	3.0	281	7.0
2,500	289	2.6	311	1.0	315	2.0	130	4.2	308	1.8	210	5.3	237	7.6	191	5.9	213	2.4	290	7.5	308	2.5	274	7.9
3,000	273	3.2	283	2.1	349	1.6	134	3.2	----	----	209	3.1	241	8.1	198	8.5	241	3.1	297	7.7	286	3.2	277	9.1
4,000	243	3.2	296	4.5	17	3.6	72	3.2	----	----	245	1.8	231	7.1	200	10.8	237	6.0	288	8.2	292	3.9	274	7.3
5,000	----	----	----	----	----	----	50	3.9	----	----	----	----	298	5.8	216	8.6	222	8.3	290	8.4	263	4.9	----	----

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, Montrose W. Hayes, in charge]

In June there was a number of overflows in the Southeastern States as well as some in Iowa, Kansas, and in Washington. Those in the Southeastern States were of minor importance.



HEAVY RAINFALL OF JUNE 7-8, 1934
VICINITY OF SIOUX CITY, IOWA
Fig. 1

In June there was a number of overflows in the Southeastern States as well as some in Iowa, Kansas, and in Washington. Those in the Southeastern States were of minor importance.

Heavy general rains over the Floyd River watershed on the afternoon of June 7, 1934, and continuing during the night of the 7th and 8th, caused the greatest flood in that stream since May 1892. At Sioux City the crest stage was 0.8 foot higher than in the destructive flood of September 1926. The rainfall was much heavier in 1926 in Sioux County, Iowa, and consequently the damage in that county was much less in 1934. The area of heavy rainfall (see fig. 1) was more widespread in 1934, when it extended over the entire watershed. At most stations well over half of the precipitation occurred within a 15-hour period, beginning on the afternoon of June 7, and in several instances half of the rain fell in one or two heavy thunderstorms that lasted about an hour each.

The progress of the 1934 flood is shown in figure 2. The flood crest moved much faster in 1934 than in 1926, thus it moved from Merrill to the Missouri River, a distance of 22.8 miles in 25 hours in 1926, while in 1934 the same distance was covered in 18 hours. This difference was no doubt in part due to the retarding influence of the more advanced vegetation in 1926.

The same storm which caused the flood in the Floyd River also caused floods in the Big Sioux River and Perry Creek. The flood in Perry Creek was the highest and most destructive since 1909.

While the flood in the Big Sioux was a damaging one it was not as destructive as those in Perry Creek and the Floyd River.

Table of flood stages in June 1934

[All dates are in June, unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
Peedee:	*Feet*			*Feet*	
Cheraw, S.C.	27	7	7	28.8	7
Mars Bluff Bridge, S.C.	17	8	13	19.0	11
Poston, S.C.	18	14	14	18.0	14
Saluda:					
Pelzer, S.C.	6	5	8	6.2	6
Chappells, S.C.	12	5	10	19.8	7
Broad: Blairs, S.C.	14	6	7	14.5	6
Wateree: Camden, S.C.	23	9	9	23.8	9
Santee:					
Rimini, S.C.	12	May 30	24	17.6	10
		28	30	12.8	29
Ferguson, S.C.	12	2	23	13.8	13
Broad: Carlton, Ga.	15	3	3	15.2	3
Savannah: Ellenton, S.C.	14	5	16	21.9	9
Ogeechee: Dover, Ga.	7	4	14	9.1	7
Oconee: Milledgeville, Ga.	20	6	6	20.5	6
Altamaha: Charlotte, Ga.	12	14	20	13.2	17, 18
EAST GULF OF MEXICO DRAINAGE					
Pearl:					
Jackson, Miss.	18	18	23	21.5	21
Monticello, Miss.	15	19	20	16.9	19
West Pearl: Pearl River, La.	12	26	29	12.6	27
MISSISSIPPI SYSTEM					
Missouri Basin					
Big Sioux: Akron, Iowa	12	8	10	16.1	8
Floyd: Merrill, Iowa	13	7	9	18.4	7
Solomon: Beloit, Kans.	18	16	19	24.5	19
Smoky Hill: Lindsborg, Kans.	21	20	20	21.5	20
PACIFIC SLOPE DRAINAGE					
Columbia Basin					
Columbia:					
Marcus, Wash.	24	Apr. 21	July 23	35.5	2
Vancouver, Wash.	15	May 29	14	16.5	5, 6

Warnings were promptly issued for all of these floods and much property was saved as a result. The total damage was more than $500,000. No lives were lost.

The following comments of the official in charge at Portland, Oreg., Weather Bureau office are of interest in connection with the rise in the Columbia River:

The annual rise of the Columbia River in 1934 had some unusual features. Heavy precipitation occurred early in the winter, but in the Pacific Northwest temperatures were unusually high, and most of this precipitation was rain. As a result of this combination the run-off during the winter and early spring was very heavy in comparison with the usual low stages during that part of the year. The opening of spring found a very small snow supply in most of the drainage basin lying within the United States, but there was a rather large snow supply in the mountains of British Columbia and this condition extended southward along the eastern slope of the Cascade Mountains about half-way across the State of Washington. The spring, like the winter, was unusually mild, and melting of snow proceeded accordingly. No high stages were experienced in the Snake and its tributaries, but the Columbia remained rather high through the spring and into June. The highest stages were mostly in the first and second weeks in May. A drop in temperature after that time resulted in a considerable fall; a return to warm weather late in May and early in June resulted in a second crest in most places, but only at one place did this equal the May crest. The flood stage was reached only at Marcus and Vancouver, Wash., and no damage was reported from either place.

The most important duty of this office in this connection was making daily forecasts of stages for the guidance of operations in the construction of the Bonneville Dam, near Portland. This was carried on in such a way that work was not at any time shut down because of high water.

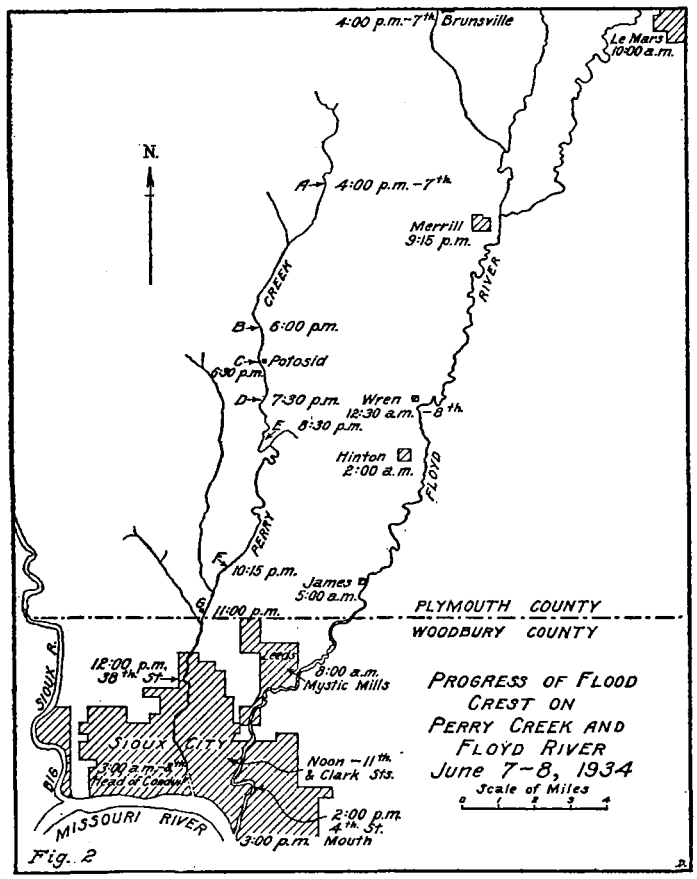


Fig. 2

The tropical disturbance which passed inland over the United States on June 16 caused very heavy rains in western Tennessee, and produced floods in the creeks and small streams, but the larger rivers remained low. The rainfall was most intense in Montgomery and Robertson Counties of Tennessee, Clarksville reporting 6.30 inches and Cedar Hill 10 inches. Considerable damage resulted.