SPECIAL RIVER STATIONS OPENED—continued.

Station.	District.
Lumber City, Ga	Macon, Ga.
Marble Falls, Tex	Galveston, Tex.
Medora, N. Dak	Bismarck, N. Dak.
Muscoda, Wis	Bubuque, Iowa.
New Martinsville, W. Va	Parkersburg, W. Va.
New River, Tenn	Nashville, Tenn.
Oxford Farmers Ditch, Colo	Denver, Colo.
Running Water, S. Dak	Sioux City, Iowa.
Shoals, Ind	Cairo, Ill.
Sistersville, W. Va	Parkersburg, W. Va.
Waterville, Pa	Harrisburg, Pa.
Williamsburg, Ky	Nashville, Tenn.

SPECIAL RIVER STATIONS CLOSED DURING THE YEAR.

Station.	District.
Barton, Oreg	Portland, Oreg.
Cedar Run, Pa	Harrisburg, Pa.
Edisto, S. C	Columbia, S. C.
Elko, Nev	Reno, Nev.
Ellwood Junction, Pa	Pittsburg, Pa.
Empire, Nev	Reno, Nev.
Floriston, Cal	Reno, Nev.
Gardnerville, Nev	Reno, Nev.
Halleck, Nev	Reno, Nev.
Ivanhoe, Va	Cincinnati, Ohio.
* Kiomache, Tex	Shreveport, La.
Las Animas, Colo	Denver, Colo.
Lovelocks, Nev	Reno, Nev.
Luxora, Ark	Memphis, Tenn.
Maricopa, P. and S. R., R. R. bridge, Ariz.	Phoenix, Ariz.
Rogers, Ind	Cairo, Ill.
Rousseau, S. Dak	Sioux City, Iowa.
Sinnemahoning, Pa	Harrisburg, Pa.
Tahoe City, Cal	Reno, Nev.
Woodford, Cal	Reno, Nev.
Yerrington, Nev	Reno, Nev.

RIVER STATION REOPENED.

Station.	District.
Riparia, Wash	Portland, Oreg.

CHANGED FROM RAINFALL TO RIVER STATION.

Station.	District.
Youngstown, Ohio	Pittsburg, Pa.

RAINFALL STATIONS OPENED DURING THE YEAR.

Station.	District.
Albany, Tex	Galveston, Tex.
* Ansonia, Pa	Harrisburg, Pa.
Big Springs, Tex	Galveston, Tex.
Bowie, Tex	Galveston, Tex.
Brownwood, Tex	Galveston, Tex.
Colorado, Tex	Galveston, Tex.
Dublin, Tex	Galveston, Tex.
* Elizabeth, W. Va	Parkersburg, W. Va.
Gainesville, Tex	Galveston, Tex.
Graham, Tex	Galveston, Tex.
Greenville, Tex	Galveston, Tex.
Kerrville, Tex	Galveston, Tex.
Longview, Tex	Galveston, Tex.
Luling, Tex	Galveston, Tex.
Oslo, Minn	Moorhead, Minn.
San Angelo, Tex	Galveston, Tex.
San Marcos, Tex	Galveston, Tex.
Seymour, Tex	Galveston, Tex.
Weatherford, Tex	Galveston, Tex.

RAINFALL STATIONS CLOSED DURING THE YEAR.

Station.	District.
Battleboro, N. C	Raleigh, N. C.
Corona, Colo	Denver, Colo.
* Letohatchie, Ala	Montgomery, Ala.
Rockfish, Va	Richmond, Va.
Summit, Cal	Sacramento, Cal.
Tupelo, Miss	Mobile, Ala.

* Cooperative.

The highest and lowest river stages during the year at selected stations are given in Table IV.

SPECIAL ARTICLES, NOTES, AND EXTRACTS.

ATMOSPHERIC INFLUENCES CAUSING MOVEMENTS OF THE SOIL.

The records made by seismographs show that in general the superficial layer of gravel, clay, sand, or other form of loose soil resulting from the disintegration of solid rock is subject to a variety of movements that have no connection with earthquakes properly so-called.

Among these microseismic movements many have a meteorological origin; such are the slow tiltings due to the infiltration of rain water, the freezing of the ground, the pressure of the wind against the walls of the buildings, the changes of atmospheric pressure and resulting changes in the weight of the superincumbent atmosphere, the added weight of a mass of freshly fallen rain or snow, the melting of glaciers and the diminished load on the continent, the changes in level and consequently in the weight and pressure of large interior lakes, the analogous changes in the level and pressure of the ocean water on the seacoasts due to winds and tides.

There are other movements due to strains in the solid rocky substratum or to the relief from strain; these belong to vulcanology and astronomy, and are traceable back to luni-solar tidal strains, to strains due to changes in the rotation of the globe, to volcanic heat and chemical changes, to the changes of aggregation that take place when amorphous strata slowly crystallize under pressure.

The slow tiltings or long tides that are so evident in every seismogram are frequently spoken of as due to the varying load of air, rain, or snow, acting on the solid rocky shell of our globe; but to me it seems more likely that these tiltings may be due to the influence of changes of load on our superficial soil, 5, 10, or 50 feet in depth, resting on a relatively rigid rocky soil. This soil is permeated with water and air. Like a sponge, it yields to every change of pressure. The water in deep wells, the water-tables, the flow of underground water, are usually found to vary with barometric pressure as plainly as they do with rainfall or melting snow, or freezing temperatures. The explanation of any local tilting phenomenon will not be satisfactory until we have thoroly studied the influence of atmospheric pressure on the soil and on the groundwater below the seismograph.

The study by Prof. Franklin H. King, of the Agricultural Experiment Station at Madison, Wis., on the behavior of groundwater shows how our seismographs are liable to be affected by changes of pressure and the reaction of the air below a wet soil.—*C. A.*