sides lie in their lee. Ascensional expansion of the air causes cooling and precipitation; the latter which is somewhat greater to leeward than to windward of the crests and greatest beside the greatest altitude, so that the amounts collected fall in the order named. Were the wind always in the east, however, there would seem to be no reason to expect the high windward (east) side to have a smaller precipitation than the low leeward (west) side. The occasional northeast wind, however, makes the east side windward of the west side's ridge.

Perhaps the rains of 1898 that gave a record of 115 inches at Brothersons were accompanied by unusually high winds.

MONTHLY STATEMENT OF AVERAGE WEATHER CONDITIONS FOR FEBRUARY.

By Prof. E. B. GARRIOTT.

The following statements are based on average weather conditions for February, as determined by long series of observations. As the weather of any given February does not conform strictly to the average conditions, the statements can not be considered as forecasts:

February is one of the stormiest months of the year along the transatlantic steamer tracks of the North Atlantic. The storms begin with east to south gales, which, in the case of westward bound steamers, quickly shift to westerly. Ice is rarely encountered as far south as the steamer routes in February, and fog is not frequent over and near the Banks of Newfoundland. In the tropical regions of the Atlantic storms seldom appear in February. On the north coast of western Cuba, however, and over the Gulf of Mexico high north winds, with decided falls in temperature, are not uncommon in February.

In the Atlantic coast districts and the Lake region of the United States the severer storms of February come from the middle-west and southwest. Well-marked storms of this type begin with high northeast winds and snow, and as they progress the wind shifts to west and northwest, with a cold wave. On the Great Plains and in the Rocky Mountain and Plateau districts February weather is usually dry and cold. As during January, however, this entire region is subject to occasional cold waves of great severity, which, with snow and high winds, sweep southward from the British Possessions in the northwest, and sometimes reach the Rio Grande and northern Mexico.

In the Pacific coast districts of the United States the season of rains and occasional strong gales continues through February.

Frost is liable to occur in any part of the United States in February. In the Gulf coast districts and in central and northern Florida the likelihood of severe freezes in February is less than for the preceding month.

THE RELATION BETWEEN THE LEVEL OF GREAT SALT LAKE AND THE RAINFALL.

By SIMON F. MACKIE, dated Salt Lake City, February 20, 1901.

The changes of level during past ages in the lake, whose remnants are known as Great Salt Lake, are matters that have been much studied from a geological point of view. The present paper relates to those changes which have occurred within a recent period and their relation to meteorology.

The drainage basin of this lake, shown in fig. 1, has an area of about fifty-four thousand square miles. How much water enters the lake from, by far, the larger portion of this area, is problematical, for all its visible affluents rise in the Wasatch or Uintah mountains. These affluents are few in number. The Jordan, Weber, and Bear are good sized rivers; Farmington Creek is a small stream; and besides these there are only a few streams from springs near the shores of the lake.

The annual evaporation from a free water surface in this vicinity is placed at about 8 feet per annum. This evaporation takes place from the whole surface of the drainage basin, as well as from the surface of the lake itself, although of course the evaporation from the soil is less than from the lake. Doubtless the rainfall in the mountains is larger than in the valleys; but, other things being equal, the evaporation is also greater. The evaporation from snow or ice is evaporation from a free water surface, as distinguished from soil, and much of the winter snowfall evaporates without melting, so that additional precipitation in the mountains is offset by additional losses.

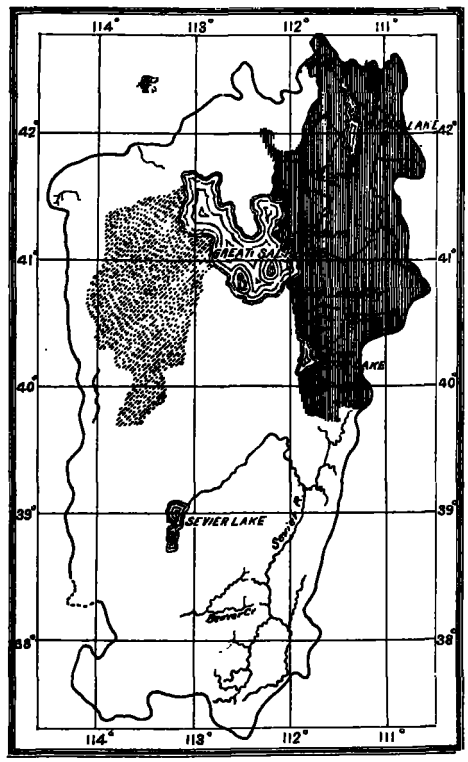

FIG. 1.—Drainage basin. Visible water supply, heavy shading; wet soil in light shading.

The actual drainage basin from which Great Salt Lake receives its visible supply of water is shown by the dotted line in fig. 1. Assuming an available rainfall of 16 inches per annum, it would require an area six times as large as the lake to supply its annual loss by evaporation. But if the visible drainage basin is apparently too small to supply the loss by evaporation, it would possibly be a mistake to suppose that no part of the supply comes from other portions. West of Great Salt Lake there is a tract of country considerably larger than the lake, in which the level of the underground water is, for practical purposes, always at the surface of the soil. This tract, if it is remembered rightly, slopes upward from the shores of the lake, until, at its western limit, it is about 100 feet higher. To the southwest Sevier Lake represents the lowest point of a drainage basin of large extent. Sevier Lake is higher than Great Salt Lake, and from it a tongue of wet soil extends northerly. So far as known, no attempt to map these wet lands has hitherto been made, and in fig. 1 is shown what is believed to be their probable boundary. The problem of the actual sources of the water supply of Great Salt Lake is therefore complex, especially as the wet area to the west receives the drainage of but one or two small mountain streams.

The changes in the volume of water in Great Salt Lake, within the period in which it has been known, are great,