CLIMATOLOGICAL DATA FOR JUNE, 1912.

DISTRICT No. 10, GREAT BASIN.

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GENERAL SUMMARY.

For the district as a whole very nearly normal conditions prevailed during June, the mean temperature being but a fraction of a degree below normal, and the average precipitation a few hundredths of an inch above normal.

Compared with last year the present June was somewhat cooler and much wetter. It was generally favorable for vegetation, but there was some complaint of the weather in Nevada being unfavorable for garden truck, the temperature being too low for rapid growth, and the frequency of dry winds was harmful. In the northern counties of Utah there was a dearth of moisture on the dry farms, and excessive windiness caused rapid evaporation.

Sunshine was somewhat below the normal amount, especially in Utah. At Salt Lake City only 69 per cent was recorded; Reno, Nev., had 81 per cent; and Winnemucca, Nev., 84 per cent.

For the district there was an average of 4 rainy, 14 clear, 10 partly cloudy, and 6 cloudy days.

TEMPERATURE.

The temperature for the district averaged 63.2°, which is 0.7° below normal. The warmest stations were in the level country west of the Wasatch Mountain, in the Nevada area, except the central portion, and in the Oregon area. Stations reporting temperatures below normal were those in the southern half of the Utah area and in the eastern portion of the Nevada area, although there were many exceptions to this general division.

The local mean temperatures in the Utah area ranged from 51° at Woodruff to 78.2° at Lemay, which were also the lowest and highest in the district. The lowest and highest monthly means in the Wyoming area were 55° at Evanston and 56.8° at Border; in Idaho, 61.4° at Weston and 63.4° at Grace; in Oregon, 55.4° at Cliff and 58° at Burns; and in Nevada, 57.2° at Potts and 73.4° at Jean.

The greatest plus departure of the mean temperature from the normal was 5.2° at Quinn River Ranch, while the greatest minus departure was 7.3° at Potts, both in Nevada. As a rule, however, the departures from the normal were less than 3°.

The month began with normal temperatures, which gradually increased, culminating in very warm weather on the 5th, 6th, and 7th, on which dates some stations reported their highest temperatures. After the 7th the temperatures fell, and from the 14th to the 18th the lowest temperatures of the month were recorded at most stations. During this period frosts from light to killing occurred nearly everywhere, and in Utah did considerable damage to beans, potatoes, corn, and other garden vegetables. After the 18th higher temperatures generally prevailed, except in the Nevada area, where moderately cool weather continued for the remainder of the month, but the night temperatures did not fall so low as they did on the 16th–18th.

The highest temperatures in the respective States or parts of States were: 90° on the 25th at Cokeville, Wyo.; 90° on the 24th at Grace, Idaho; 100° on the 27th at Low, Utah; 89° on the 5th at Cliff and Silver Lake and on the 24th at Burns, Oreg.; 88° on the 3d at Truckee, Cal.; and 104° on the 4th at Jean, Nev. The lowest reported were: 22° on the 25th at Evanston, Wyo.; 30° on the 16th at Weston, Idaho; 21° on the 16th at Strawberry Tunnel, west, and on the 13th, 19th, and 28th at Woodruff, Utah; 23° on the 15th at Cliff, Oreg.; 30° on the 15th at Truckee, Cal.; and 23° on the 16th at Eureka, Nev.

PRECIPITATION.

On the average June is next to the driest month of the year, the normal rainfall being about 0.60 inch. The precipitation during this month consists for the most part of local showers, which explains the irregular distribution of moisture, stations quite near one another receiving widely varying amounts.

The precipitation for the present June averaged about normal. The largest monthly amounts fell in the Oregon area and northern portion of the Utah area; and the least in the Nevada and southern portion of the Utah areas.

Many stations reported amounts considerably over an inch; while 10 stations reported only traces, and 3 stations no rain whatever.

The rainiest portion of the month was from the 5th to the 14th but many stations reported fairly good amounts on various dates during the last half of the month.

STRAWBERRY VALLEY PROJECT.

The Strawberry Tunnel is now receiving considerable attention. The mountain is now nearly pierced and it is expected that water will be furnished farmers through this tunnel next spring.

Regarding the progress made during June, Project Engineer J. L. Lytel reported as follows:

At Strawberry Tunnel, 458 linear feet were excavated at the west heading, and 395 linear feet at the east heading. At the east heading the material encountered was a combination of shale and sandstone. Heavy flows of water were encountered in the top and sides during the latter part of the month, which greatly impeded the progress of the work.

At the west heading the material encountered varied from mud and shale, carrying considerable water, to sandstone and shale. The water encountered at this heading was not sufficient to impede progress. Some swelling ground was encountered, which necessitated considerable retimbering, and nine shifts were lost on this account. At the west heading 541 feet of sides and arc lining and 257 feet of bottom were placed. The tunnel, as a whole, is about 82 per cent completed. At Indian Creek dike and on the Indian Creek diversion canal melting snow and frequent rains have kept the ground too wet for any construction work. At Strawberry Dam a small force was engaged in overhauling equipment, operating the sluicing tunnel, and other like duties. At the east portal of Strawberry Tunnel the shaft for the controlling works was completed and excavation of the portal cut commenced.

SNOW SLIDES AND SLIPS.

By LEON PEUGEOT, Superintendent Burro Mine, Utah.

During my years in the hills I have had ample opportunity to become well acquainted with snow slides; and having noted conditions existing previous to various slides, I believe that a little study by the man on the ground may often be the means of saving life and property.

My knowledge of slides was obtained in the vicinity of Burro mine, located on Black Mountain, in the Wasatch

Showing how in a "break slide" the snow breaks away to some underglazed surface. Note the wall of snow about 5 feet high in the background. The author of this article is seated on the underglazed surface.

Range, 8¾ miles as the crow flies from Salt Lake City and 7 miles from Bountiful. The mine camp is located in Howard's Hollow, named after a Mr. Howard, a Mormon pioneer, who, with his oxen, met his death at this point in a snowslide while snaking logs for use in connection with the building of the Mormon Temple.

Howard's Hollow is an immense draw or basin starting from the west side of the ridge and running to Mill Creek below, a distance of a mile and a quarter. The camp lies a quarter of a mile below the crest of the ridge, the ridge altitude being about 10,500 feet and the camp altitude above sea level being about 10,000 feet. The altitude of the creek is about 8,500 feet. The angle of the slope from the ridge to the camp is 39°, and the angle from the camp to the creek is 26°. The slide zone is from the ridge to the creek.

Slides depend on numerous things—weight of snow, warmth, sudden cold, excess of snow at a given angle, the nature of the underlying snow, and the temperature and the weather that prevailed when the first snows of the season were laid. In fact this early snow has much to do with the most dangerous and damaging of all slides, namely, the "to-the-ground slides," which are to be feared more than all others, for they carry more ice and solids, and they shear all in their path—make a clean sweep, so to speak.

Next in point of danger is the "break slide." This gives way to some underglazed surface, say, from 2 to 4 feet down. This is dangerous to man and beast, but not necessarily to buildings and other property, because it will be confined to the layer which broke away and slide over all beneath. Another is the surface or fresh snowslide, and to man this rarely does more damage than to frighten him, although smothering is possible and death might result from that cause.

In this locality January, February, and March are the usual slide months, and each succeeding month of these is more dangerous than the preceding one. As a rule the snow slides down before April 1, and slides seldom occur in December. However, one should be watchful at all times when the ground is snow covered, and especially so in February and March.

Previous to snowslides the air is frequently moist, the mist heavy, and the exposed parts of the observer feel sticky, or more as if a damp rag were pressing the skin. The snow is soggy and occasional glimpses of trees and timber give the impression that they are sweating a sort of mildew. The bright sun and clear-day slides are the ones, however, that swell the death lists; for it is on such days that the foreman orders his men out for timbers, never giving a thought to the stillness of the atmosphere, the depth of the snow, the density thereof, the temperatures of the past few days, or (the most essential and vital point) the early snows of the season. If you should question him as to the possible danger of a slide he would laugh at you and probably tell you that the snow is solid enough to bear up a troupe of elephants, or that it can not slide until it melts enough for the water to soak through and take the frost out of the ground, or other indefinite reasons.

In the early part of 1911 a snowslide occurred at Alta, Utah, that caused the death of several men and a large loss of property and business delays. To my mind this catastrophe would have been reduced to a minimum if proper forethought had been given. Alta, compared to this locality, is nearly identical and only a few miles separate the two camps. The day in question gave me every reason, from my own experiences, to expect a slide. We were in need of mine timbers, but I advised the foremen to hold the men indoors. I was so sure of the slide probabilities that I even went to the kitchen and instructed the cook to keep a low fire, saying that if the slide did come he should rush to the stove and put out his fire. Shortly afterward the slide came. It may have been a lucky guess on my part, for I do not believe that anyone can predict a slide to a day.

We often hear of men seeing a slide coming, running 50 or 100 feet, and hanging on to a tree until the slide passes. This is pure fiction. When it comes to a genuine slide, you do not see it coming; if you saw anything it would be gone almost instantly. A snow slip may start from a footfall, a heavy gust of wind, a blast, or a jar. It is simply a case of very dry snow piled on a hard, glassy surface at a steep angle, a little urging of which causes it to slip. It is not caused by its own weight as a slide proper is, but rather by the lack of moisture, the iced surface, and the dryness of the fresh fall.

The fan or wagon-wheel slide is another variety of slip. If there is a fall of from 2 to 4 inches of snow on a moist surface and the sun comes out warm and the pine boughs with little dabs of snow on their branches seemingly grow suddenly weary of holding them and let them drop simultaneously, they start rolling down the hill, growing larger