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DEPARTMENT OF METEOROLOGY

1. The principal investigations and experiments carried on during the year were

(a) The Forecasting of Frost from Mountain Tops.

(b) The Relation of Mountains and Forests to the Conservation of Snow, with special emphasis on Forecasting Seasonal Water Supplies.

(c) The Temperature Survey of the Agricultural Lands of Nevada and Comparative Temperature Studies.

2. The important practical or scientific results are:

(a) A pantograph by means of which the readings of recording instruments using widely different scales may be copied for comparison and study and for permanent filing on a single sheet. By it the English units of measurement can be changed to metric or absolute; time errors can be corrected; and curved coordinates changed to square. Because of it, the time usually required in comparing records can be reduced two-thirds.

(b) An evaporation pan has been devised for studying the rate of evaporation of snow on the crowns of trees.

(c) The method of protecting evaporation pans from falling snow by the use of hoods has been devised and found successful. It is now possible to continue measurements of the evaporation of snow even during snow storms.

3. The investigations under the Adams Act are entering upon their final stages. In the investigation of the possibility of forecasting frost from mountain tops, somewhat more than thirty cold waves have been studied during the past four years with the following results:

Of These cold-waves, about one-half were accompanied by nearly synchronous changes at the base stations; one-third were followed within 48 hours by lower minimum temperatures at the base stations; one-sixth were followed by a slight rise of temperature at the base stations.

The difference in time between the fall of temperature on Mount Rose and on the floor of the valley below and the amount should also be determined. The further study of this probably depends largely on the detailed study of the effects of cloudiness at the waning of storms; for the fact that frosts attend storms in Nevada is universally observed.

In the study of the effect of mountains and forests on the conservation of snow, attention has been concentrated on the study of the evaporation of snow to determine the effect of the forests on falling snow and the loss in snow to be expected on the watershed during the season of run-off.

Snow surveying has been continued to detect possible errors in forecasting water supplies, especially the errors due to local variations in precipitation, redistribution of the snow owing to seasonal variations in the wind, and losses in run-off due to late spring.

The facilities for the study of the snow have been increased by the putting into service of the "Mount Rose", a home-built cabin cruiser, which was used throughout the winter in determining local divergencies, in precipitation around the Lake's edge and making studies of evaporation.

4. No new investigations have been recently inaugurated.

5. Cooperation with The Truckee River General Electric Company and the U. S. Reclamation Service has been maintained at Lake Tahoe to the extent that the former has kindly placed its construction headquarters and adjacent land at the service of the Experiment Station as snow observer's headquarters and the latter has shared in financing the seasonal snow survey. Extensive cooperation with the Reclamation Service and the U. S. Weather Bureau is being planned for the coming year.

The temperature survey financed originally by the State has been continued during the latter half of the year ~~and~~ on private funds. The survey of the Truckee Meadows has now been completed and a portion of the stations will be transferred to the Truckee-Carson Project to complete the survey there in cooperation with the Federal Experiment Farm at Fallon.

The temperature studies accompanying the survey have resulted in the discovery of a simple method of forecasting the lower limit of possible frost by subtracting from the maximum temperature of the preceding day the maximum radiation that occurs at night in the spring.

A study of the relation of blossoming to losses by frost has been made with the result that it is believed that home orchards can be economically maintained by selecting late or long blossoming trees and heating the orchards on rare occasions. The economic value of such orchards to the isolated farmer is evident.

6. A state appropriation of $900.00, residue from a biennial appropriation, was available the first half of the year.

7. (a) Relief map of Lake Tahoe showing irregularities of precipitation.

(b) Two views of evaporation pans, one with hood, the other without.

J. E. CHURCH, JR., Meteorologist.