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The only comprehensive descriptive work on the climates of all parts of the world, with tabulated statistics and references to all the important literature of climatography, is J. Hann's Handbuch der Klimatologie, 3rd ed., Stuttgart, 1908–11. Vols. 2 and 3, dealing with climatography, have not been translated.

The leading collection of climatic charts for the whole world is J. G. Bartholomew's Atlas of meteorology, Westminster, 1899 (Bartholomew's physical atlas, vol. 3).

On the climate of the United States consult Alfred J. Henry, Climatology of the United States, Washington, 1906 (U. S. Weather bureau Bull. Q.)

The chief collection of rainfall data for the world at large, exclusive of Europe, is Alexander Supan's Verteilung des Niederschlags auf der festen Erdoberfläche, Gotha, 1898 (Petermann's Mitteilungen, Ergängzungsheft 124).

There is a voluminous literature on regional and local climatography.

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American meteorological journal. Boston, etc. 1884–1896.

Beiträge zur Physik der freien Atmosphäre. Strassburg. 1904–.

Meteorologische Zeitschrift. Braunschweig, etc. 1884–.

Monthly weather review, Washington. 1872–. (Published by U. S. Weather bureau.)

Quarterly journal of the Royal meteorological society. London. 1871–.

NEW BOOKS.

Agricultural Meteorology (The Effect of Weather on Crops). J. Warren Smith. (304 pages, 8 plates, 88 figures, index. The Macmillan Company, New York, 1920. Price, $2.40.)

This is the first book on the subject that has ever been published and "is the outgrowth of over thirty years in climate and crop work in different sections of the United States, and fifteen years contemporary instruction in meteorology and agricultural meteorology at the Ohio State University."

It "is designed primarily for university and college students, but is entirely practicable for agricultural high-schools, and for farmers' reading-courses. It

will prove of interest to individuals who wish information regarding climate and crops, and the effect of the weather in varying the yield of crops."

The various chapters cover: I, Introductory Meteorology; II, Agricultural Meteorology; III, Agricultural Climatology; IV, Correlation; V, Climate and Crops; VI, Climate and Farm Operations; VII, Weather and Crops; VIII, The Effect of Weather on the Yield of Grains; IX, The Effect of Weather on Vegetables and Miscellaneous Crops; X, Weather Forecasts and Warnings; XI, Frost and the Protection of Crops from Frost Damage; XII, Value of Lightning-Rods.

The author is Chief of the Division of Agricultural Meteorology of the U. S. Weather Bureau. In chapters VII, VIII and IX he has given in detail the results of investigations on the effect of the different weather factors in varying the yield of cotton, corn, wheat, oats, rye, potatoes, fruit, tobacco, and other crops.

The effect of climate on crop distribution and farm operations is shown. A small amount of space is devoted to the effect of weather on insects and plant diseases, as well as on seeds of different crops.

The book is one of the Rural Text-Books Series, edited by Liberty H. Bailey.

HOW THE U. S. WEATHER BUREAU CAN HELP THE HORTICULTURIST.

Read before Iowa State Horticultural Society, Des Moines, December 8, 1920. (Author's abstract.)

While the experienced farmer or horticulturist, without the aid of instruments, can tell with fair accuracy, what the weather will be in the next twelve hours, it is obvious that he can not extend the period much because weather changes move several hundred miles in twenty-four hours and can not be foreseen from wind direction and force or sky signs in the relatively thin five-mile layer of atmosphere next the earth to which storm activity is mostly confined. The Weather Bureau through telegraphic reports can extend its forecasts three to six twelve-hour periods into the future.

Personal conferences between the weather forecaster and the expert orchardist make possible the amplification of forecasts to fit the specific needs of the horticulturist. Successful spraying for apple scab is largely dependent upon weather. Eight hours of rainy weather will germinate the spores of this disease. Spraying just before the rain will prevent damage. Short duration of rain followed by sunny, breezy, drying weather will not germinate the spores and in such a case spraying is unnecessary. Forecasts of these conditions are useful.

Apple aphis seeks the sheltered side of tender buds. Therefore, effective spraying must be done against the wind. Topography or direction of tree rows sometimes makes spraying more advantageous when done from certain directions. Forecasts of wind direction and force are useful in such cases.

Egg laying activities of the codling moth are closely related to temperatures of 60 degrees. Forecasts of this temperature might be useful in planning the destruction of the hatching larvae.

The Weather Bureau makes a special effort to advise all persons shipping fruits and vegetables, as to the lowest temperatures expected in a twenty-four to thirty-six hour shipping radius.—*Charles D. Reed.*
