

earth was hilled up around the trees. There is reason to believe that the latter method of protection saved that portion of the orchard, although the temperature must have been about 10° Fahrenheit on the 13th.

THE DUST IN THE ATMOSPHERE.

An excellent article on dust contributed by A. H. Thiessen, observer, to the February number of the Report of the Montana section, leads us to suggest that those interested in adding to our knowledge of this subject, should make use of the dust counter devised by Mr. John Aitken and then described by him on pages 734-754 of his article in Weather Bureau Bulletin No. 11, part 3. The original dust counter has received several successive modifications and in its present form has become a portable or pocket instrument which packs into a case about the size of a well filled cigar case; it can, we believe, be obtained at a comparatively slight cost by addressing Mr. Aitken, directly, at Darroch, Falkirk, Scotland.

THE UTILITY OF THE WEATHER BUREAU LIBRARY.

For several years past the Chief of the Weather Bureau has endeavored to eke out the limited facilities for study and scientific reading available at our regular Weather Bureau stations by circulating copies of certain journals devoted to the progress of science in general. In addition to this the attention of the observers at our regular stations should be called to the fact that if there is any book in the library of the Weather Bureau that they desire to consult, it can easily be sent to them for that purpose. It is desirable to make the library as useful as possible to the service.

Of course, books should not be kept out very long owing to the probability that others will also wish to see them, but it is a great deal better to have the use of the original memoir of an author, if only for two weeks, than to rely upon abstracts and reviews by others. The Weather Bureau observers are invited to make full use of the library in order to familiarize themselves with recent advances in meteorology and its applications to the needs of the community.

THE BLESSING OF COLD WEATHER.

The great cold wave of February gives occasion for some remarks under the above heading in the News and Courier, Charleston, S. C., February 26:

It is something to be proud of that we have seen zero and still live. * * * Mississippi and Louisiana may at least be reasonably certain that the yellow fever, which for the past two years has lingered in concealment, has been effectually slain by the cold. * * * Charleston will be all the better for the freezing process and the loss she has sustained in early vegetables and fruit will be more than compensated in other ways. * * * The loss falls on special individuals but the whole community is benefited.

It is fortunate that physicians have at least discovered that the old idea that warmth is essential to the cure of all kinds of lung diseases is a mistake and that they now recognize that cold, dry air will do more for the sufferers than the tropic climates of the south.

RECENT EARTHQUAKES.

Through the kindness of Commander N. Sebree, U. S. N., lighthouse inspector, Mr. John F. Ingersoll, keeper of the Point Sur Light station, 36° 25' N., 121° 55' W., on the coast of California, reports on the earthquake of February 7 as follows:

The tower is built on solid rock; the second assistant keeper was on watch in the tower, sitting down reading. There has been no earthquake here recently. The time when the shock was felt was 8:55 p. m., standard railway time, viz, one hundred and twentieth meridian time. The clock was compared with the Western Union clock in Monterey on the 9th. The shock only lasted one or two seconds. There was only one shock felt; it was very light and not noticed generally. There was no other cause than earthquake for the jar felt here. The jar came horizontally from the east; the clock in the tower faces the east and the jar caused the pendulum to strike the front and sides of the clock, but the clock did not stop.

February 8-9, several reports published in the Chicago papers state that earthquake shocks were felt about 11 p. m., February 8, and at 12:30 a. m., 1 a. m., 3 a. m., and between 3 a. m. and 4 a. m., also some time after 6 a. m. of the 9th.

Mr. J. J. Cox, forecast official, Weather Bureau, reports that several shocks, felt yesterday and this morning, may have been an earthquake, but are quite as likely to have been due to the freezing and cracking of huge icefields in the Lake.

February 9, several shocks are reported from Belen, N. Mex. February 13, light shocks at Napa and Sonoma, Cal.

February 13, an earthquake was felt distinctly at Lynchburg, Va., during the great blizzard of that morning; many persons were awakened, buildings shaken, and furniture moved; it was considered more violent than any that has been felt there in recent years.

February 13, at Mount Airy, N. C., at 4 a. m., lasting ten seconds; at Charlotte, N. C., at 4:30 a. m., oscillations from southeast to northwest.

On February 13, 4:30 a. m., the citizens of Winston, N. C., were awakened by four severe earthquake shocks.

February 13, an earthquake shock with grinding noise was felt at 4:35 a. m., (evidently eastern standard time) at Radford, in southwestern Virginia. A distinct shock was also felt at Martinsville, Henry County, Va., and the shock was felt throughout that part of the State. An earthquake of from 5 to 10 seconds duration was felt in eastern Tennessee at 3:30 a. m., of the same date (evidently central standard time).

Professor Marvin states that no earthquake was recorded on the Washington seismograph on this date.

February 24, light shock at San Bernardino.

BACK NUMBERS OF THE MONTHLY WEATHER REVIEW.

Prof. Charles E. Thorne, on behalf of the library of the Ohio Agricultural Experiment Station, at Worcester, Wayne County, Ohio, states that he has a number of odd numbers of the MONTHLY WEATHER REVIEW for the years 1876-93, and desires, by exchange or otherwise, to complete the files of the library of that station by obtaining the complete volumes for the years previous to 1881, and individual numbers for subsequent years, as follows:

1881. February, March, May, December, Summary.

1882. All after July.

1883. Summary.

1884. February, August, December, Summary.

1885. All after June.

1886. The entire volume.

1887. January, February, May, Summary.

1888. Summary.

1890. January.

1894. June.

THE WEATHER BUREAU AND THE ICE BUSINESS.

We take pleasure in noting that, according to The Ice World, a journal published at Albany in the interest of the

ice business, the ice men of New York have been following the forecasts of the Weather Bureau very closely and laying out their work according to the prognostications. They say:

The difference in the results obtained under the new and old system is as great as the difference in the products of the wild and the cultivated soil.

When a report shows that a cold wave is approaching, the superintendent gives orders to have the ice plowed, if it is not already of sufficient thickness. The cold settles down through the grooves or furrows, and as a result the ice making progresses about twice as fast as it otherwise would.

Then, again, when the field is covered with snow the forecasts determine to the superintendent the course to be pursued. If the weather is to continue cold the field may be cleared in its entirety, but if bright sunny days are in prospect the only wise course is to uncover just that section of the field upon which work is progressing and leave the rest protected from the ravages of the sun by the mantle of snow.

HISTORY OF WEATHER PREDICTIONS.

Referring to some remarks by Mr. Charles Foster, jr., in the MONTHLY WEATHER REVIEW for January, 1899, page 17, the Editor solicited further information from him. Mr. Foster had fortunately preserved a copy of an article published by him as an editorial in the Windham County Gazette in the year 1837 or 1838. We take pleasure in reprinting this fragment of early history. Its colloquial style introduces us to the popular editor of a successful country paper sixty years ago. The time is not so far distant when one had to apologize for entertaining such bold ideas and for daring to oppose the narrow views of those who had spent their lifetime in small villages. Since the days of the landing of the *Mayflower*, each successive generation in New England has distinguished itself by a gradually wider departure from the

thoughts and customs of its predecessor. There has been a reaching out after new knowledge, in the hope and belief that the truth would make us free.

Espy, Redfield, Ferrel, and Loomis, as meteorologists; Henry, as physicist; and Morse, as inventor, rapidly developed the ideas that were necessary in order to enable the country to realize the predictions expressed in Mr. Foster's article.

THE WEATHER.

The weather is something which interests everybody, and there are many signs supposed to indicate changes and storms, but nothing, as yet, which seems to definitely settle the matter. A few days ago we were at the grist mill and had a long talk with the miller, Mr. James Stevens, whom most of our readers know, and all will remember. He has a weather ken, sharply observes clouds, notes winds, temperature, etc. He has settled many points as to storm conditions, but says he lacks essential elements to focus things to definite results. He said we could deal with generals, but were short on particulars. We suggested that storm and weather conditions should be studied outside of local limits, be extended over wide areas as near simultaneously as possible; that if Government would undertake observations extending across the continent, the observation lines to run parallel at distances sufficiently apart to catch every phase of what was supposed to be causative of changes, then, when the observations were collated and digested, there would be the necessary data to determine the cause of changes and the law of storms. He concurred in this opinion, believed in this way we might tell where and when storms would gather, and mark out their course and strength. He laughingly said, "Some people would call us crazy, and say it would be wicked to pry into the mysteries of God's Providence, but such stuff is watered moonshine. God never meant to have men die fools, with the opportunities of learning that he has set around about." Such was the substance of our talk. We think it was pretty good common sense, which one day will creep under the skull of some official, and set in motion the machinery of weather observation. We believe it is possible to predict storms, and feel pretty sure it will be undertaken at no distant day. To do it the Government will not step outside of its proper functions.

DESCRIPTION OF TABLES AND CHARTS.

By ALFRED J. HENRY, Chief of Division of Records and Meteorological Data.

Table I gives, for about 130 Weather Bureau stations making two observations daily and for about 20 others making only one observation, the data ordinarily needed for climatological studies, viz, the monthly mean pressure, the monthly means and extremes of temperature, the average conditions as to moisture, cloudiness, movement of the wind, and the departures from normals in the case of pressure, temperature, and precipitation, the total depth of snowfall, and the mean wet-bulb temperatures. The altitudes of the instruments above ground are also given.

Table II gives, for about 2,700 stations occupied by voluntary observers, the highest maximum and the lowest minimum temperatures, the mean temperature deduced from the average of all the daily maxima and minima, or other readings, as indicated by the numeral following the name of the station; the total monthly precipitation, and the total depth in inches of any snow that may have fallen. When the spaces in the snow column are left blank it indicates that no snow has fallen, but when it is possible that there may have been snow of which no record has been made, that fact is indicated by leaders, thus (. . .).

Table III gives, for 26 stations selected out of 113 that maintain continuous records, the mean hourly temperatures deduced from the Richard thermographs described and figured in the Report of the Chief of the Weather Bureau, 1891-92, p. 29.

Table IV gives, for 26 stations selected out of 104 that maintain continuous records, the mean hourly pressures as automatically registered by Richard barographs, except for Washington, D. C., where Foreman's barograph is in use. Both instruments are described in the Report of the Chief of the Weather Bureau, 1891-92, pp. 26 and 30.

Table V gives, for about 130 stations, the arithmetical means of the hourly movements of the wind ending with the respective hours, as registered automatically by the Robinson anemometer, in conjunction with an electrical recording mechanism, described and illustrated in the Report of the Chief of the Weather Bureau, 1891-92, p. 19.

Table VI gives, for all stations that make observations at 8 a. m. and 8 p. m., the four component directions and the resultant directions based on these two observations only and without considering the velocity of the wind. The total movement for the whole month, as read from the dial of the Robinson anemometer, is given for each station in Table I. By adding the four components for the stations comprised in any geographical division the average resultant direction for that division can be obtained.

Table VII gives the total number of stations in each State from which meteorological reports of any kind have been received, and the number of such stations reporting thunderstorms (T) and auroras (A) on each day of the current month.

Table VIII gives, for about 70 stations, the average hourly sunshine (in percentages) as derived from the automatic records made by two essentially different types of instruments, designated, respectively, the thermometric recorder and the photographic recorder. The kind of instrument used at each station is indicated in the table by the letter T or P in the column following the name of the station.

Table IX gives a record of rains whose intensity at some period of the storm's continuance equaled or exceeded the following rates:

Duration, minutes..	5	10	15	20	25	30	35	40	45	50	60	80	100	120
Rates pr. hr. (ins.)..	3.00	1.80	1.40	1.20	1.06	1.00	0.94	0.90	0.86	0.84	0.75	0.60	0.54	0.50